89th Congress
2d Session

COMMITTEE PRINT NO. 16

Planning research corporation, Los Angeles.

ECONOMIC DEVELOPMENT

OF THE

TERRITORY OF GUAM

PARTS 1, 2, AND 3—APPENDIX

INTERNATIONAL MONETARY FUND
INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
Joint Library
Washington, D. C. 20431

FEBRUARY 1966

Printed for the use of the Committee on Interior and Insular Affairs

U.S. GOVERNMENT PRINTING OFFICE
WASHINGTON : 1966

61-092

84025

9W
338.9
P69e

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS

WAYNE N. ASPINALL, Colorado, *Chairman*

LEO W. O'BRIEN, New York
WALTER ROGERS, Texas
JAMES A. HALEY, Florida
ED EDMONDSON, Oklahoma
WALTER S. BARING, Nevada
RALPH J. RIVERS, Alaska
ROY A. TAYLOR, North Carolina
HAROLD T. JOHNSON, California
HUGH L. CAREY, New York
MORRIS K. UDALL, Arizona
COMPTON I. WHITE, JR., Idaho
PHILLIP BURTON, California
DAVID S. KING, Utah
WALTER H. MOELLER, Ohio
JOHN V. TUNNEY, California
JONATHAN B. BINGHAM, New York
THOMAS S. FOLEY, Washington
N. NEIMAN CRALEY, JR., Pennsylvania
JOHN A. RACE, Wisconsin
RICHARD WHITE, Texas
TENO RONCALIO, Wyoming
SANTIAGO POLANCO-ABREU,
Resident Commissioner, Puerto Rico

JOHN P. SAYLOR, Pennsylvania
E. Y. BERRY, South Dakota
CRAIG HOSMER, California
JOE SKUBITZ, Kansas
CHARLOTTE T. REID, Illinois
LAURENCE J. BURTON, Utah
ROGERS C. B. MORTON, Maryland
WENDELL WYATT, Oregon
GEORGE V. HANSEN, Idaho
ED REINECKE, California
THEODORE R. KUPPERMAN, New York

SIDNEY L. MCFARLAND, *Professional Staff Director*
T. RICHARD WITMER, *Counsel*

SUBCOMMITTEE ON TERRITORIAL AND INSULAR AFFAIRS

LEO W. O'BRIEN, New York, *Chairman*

WALTER ROGERS, Texas
JAMES A. HALEY, Florida
RALPH J. RIVERS, Alaska
ROY A. TAYLOR, North Carolina
HUGH L. CAREY, New York
PHILLIP BURTON, California
JONATHAN B. BINGHAM, New York
THOMAS S. FOLEY, Washington
N. NEIMAN CRALEY, JR., Pennsylvania
SANTIAGO POLANCO-ABREU,
Resident Commissioner, Puerto Rico

JOHN P. SAYLOR, Pennsylvania
CHARLOTTE T. REID, Illinois
E. Y. BERRY, South Dakota
LAURENCE J. BURTON, Utah
ROGERS C. B. MORTON, Maryland
JOE SKUBITZ, Kansas

DR. JOHN L. TAYLOR, *Consultant on Territorial Affairs*

NOTE.—The chairman, Hon. Wayne N. Aspinall, is an ex officio member of each subcommittee.

CONTENTS

	Page
Statement of Hon. Wayne N., Aspinall, chairman, House Committee on Interior and Insular Affairs	VII
Letter of transmittal from Hon. Stewart L. Udall, Secretary of the Interior, to Hon. John W. McCormack, Speaker of the House of Representatives, dated March 14, 1966	IX
Letter from Hon. Robert M. Mangan, Chairman, Federal-Territorial Commission for Development of a Long-range Economic Plan for Guam, to Hon. Stewart L. Udall and Hon. Manuel F. L. Guerrero, dated March 14, 1966	XI
Interim report dated April 6, 1965, which describes the contract procedure agreed upon to produce the required plan, prepared by the Federal-Territorial Commission, Robert M. Mangan, Chairman, Carlton Skinner, and Gordon E. Reckord	XV
Part 1 (introduction)	1
I. The basis for growth	5
A. Economic base and the private sector	5
B. The labor force and future employment requirements	7
C. Key factors in the development potential	8
D. Recommended lines of development	20
II. Development possibilities in the private sector	21
A. Exports	21
B. Import replacement	26
C. Tourism	29
D. Other services	31
III. Import labor replacement	33
IV. Public education	35
A. Administrative staff turnover	35
B. Instructional staff	36
C. Academic achievement	37
D. Educational consultants and specialists	38
E. Salary levels	38
F. Vocational and technical training	39
G. College of Guam	42
V. Requirements and resources in the public sector	45
A. Government of Guam	45
B. The Federal Government	53
Table 1.—Distribution of employment	6
Table 2.—Imports, exports, and transshipments in revenue tons by country, fiscal year 1964	10
Part 2 (introduction)	55
I. Export of goods	57
A. Manufacturing (raw material based)	61
B. Manufacturing (imported components)	67
II. Import replacement	81
A. Commercial production of fruits and vegetables	81
B. Commercial livestock and feed production	88
C. Manufacturing	100
III. Tourism	101
A. Impact of tourist expenditures	102
B. The tourist market	103
C. Transpacific travel and costs	105
D. Basic tourist facilities	107
E. Tourist attractions	107
F. Guam as gateway to the trust territory	108
IV. Other services	109
A. Trade, distribution, administration, and finance	109

Page

Table 3.—High tariff items for potential development 58
Table 4.—Tuna canning, plant and equipment 63
Table 5.—Tuna canning, personnel 63
Table 6.—Tuna canning, annual operating costs and revenue 64
Table 7.—Tennis shoes, plant and equipment 69
Table 8.—Tennis shoes, annual operating costs and revenue 70
Table 9.—Photographic and optical products 71
Table 10.—Bicycles (Tsusa 732.02–26) 77
Table 11.—Measuring testing and controlling instruments 78
Table 12.—Commercial imports, exports and transshipments of selected agricultural products, fiscal 1964 (thousand pounds, except as otherwise specified) 82
Table 13.—Guam-grown fruits and vegetables marketed during the first 6 months of 1965 82
Table 14.—Broiler processing, plant and equipment 90
Table 15.—Broiler production, total investment 90
Table 16.—Broiler processing, personnel 91
Table 17.—Broiler growing costs 92
Table 18.—Broiler processing costs 92
Table 19.—Broiler production, total operating costs and revenue 93
Table 20.—Mixed feed mill, plant and equipment 96
Table 21.—Mixed feed mill, annual operating costs and revenue 97
Table 22.—Visitors to Pacific destinations, 1958–64 101
Table 23.—U.S. citizens departing to foreign countries, total and for Pacific region, 1958–64 (years ending June 30) 104
Table 24.—U.S. citizens visiting Pacific destinations in 1963 and 1964 (in thousands) 105
Table 25.—Air Force purchases by item and source of supply, July–December 1964 111
Major monthly fruit and vegetable requirements of the U.S. Navy and Air Force (table) 84
Part 3—Appendixes 113
Appendix 1.—Population, labor force, employment, and income 113
A. Population and labor force 113
B. Employment 123
C. Income and wage rates 126
D. Basic employment requirements 129
Table 1.—Population of Guam in census years 113
Table 2.—Household and family status, 1960 114
Table 3.—Population by race, age, and sex, 1960 115
Table 4.—Labor force status, 1960 115
Comparison table showing results of the Commissioners' censuses for 1960–65 compared with U.S. census returns for 1960 116
Table 5.—Live births by place of birth and mother's birthplace 117
Table 6.—Attrition rates by age group, 1950–60, Chamorro population 117
Table 7.—Chamorro population by age group, based on 1950–60 attrition rates 118
Table 8.—Hypothetical population distributions, 1965–80 120
Military personnel figures supplied by the military authorities in Guam (table) 121
Table 9.—Hypothetical labor force participation of the Chamorro population, 1965–80 122
Table 9A.—Hypothetical labor force participation of the Filipino and "other" populations, 1965–80 122
Table 10.—Hypothetical local labor force composition (excluding statesiders) 1960–80 123
Table 11.—Industrial group of employed persons, by race and sex, for Guam, 1960 124
Table 12.—Occupational group of employed persons, by race and sex, for Guam, 1960 125
Table 13.—Employment, 1960 126
Table 14.—Government employment 127
Table 15.—Median and average income, Guam and United States, 1959 128
Table 16.—Hourly wage rates 128

Page

Appendix 2.—Natural resources and land use 131
A. Environmental factors 131
B. Climatic factors in tourism 135
C. Environmental factors in industry and commerce 136
D. Environmental factors in agriculture 137
E. Land use 138
F. Land capability 141
G. Land availability 143
H. Land planning 149
Figure 1.—Orientation map of Guam 132
Figure 2.—Urban land use 140
Figure 3.—Agricultural land capability 142
Figure 4.—Public lands of Guam 146
Appendix 3.—Freight transportation 151
A. Ocean transportation 151
B. Airfreight transportation 163
C. Conclusions 163
Table 1.—Imports, exports, and transshipments in revenue tons by country, fiscal year, 1964 152
Table 2.—Guam trade 152
Table 3.—Shipments from the United States to Guam, 1964 152
Table 4.—Comparison of freight tariffs; selected commodities imported into the United States from Guam, the Philippines, Japan, and Hong Kong 161
Table 5.—MSTS freight tariffs between Guam and the United States 162
Table 6.—Average subsidies paid by type of ship 162
Table 7.—General commodity air cargo rates between Guam, Manila, and Tokyo and San Francisco 163
Appendix 4.—Local business environment 165
A. Construction costs 165
B. Professional and business services 167
C. Banking services and credit 168
D. Public services 169
E. External communications 169
F. The commercial port 170
G. Housing 171
Table (1).—First 80-unit increment 166
Table (2).—Second 31-unit division 166
Construction costs for the Kaiser Hawaii Kai Dededo development (table) 166
Construction costs for the Kaiser Hawaii Kai Dededo development, alternative breakdown (table) 166
Telephone service furnished by the government of Guam to civilian subscribers (table) 169
Power supplied by the government of Guam to civilian subscribers (table) 169
Commercial port rates and charges of the port of Guam (table) 170
Appendix 5.—Public education, vocational and technical education, and the College of Guam 173
A. Public education 173
B. Private schools 178
C. Vocational and technical training 179
D. College of Guam 184
Table 1.—Historical and projected enrollment in Guam public schools, 1957–70 173
Table 2.—General fund and per student expenditures for public education on Guam, 1957–65 174
Table 3.—Academic years spent on Guam by contract educational personnel 176
Table 4.—Degrees held by instructional staff, Guam Department of Education, 1964 178
Table 5.—Distribution of skill levels, U.S. Navy employment, 1964 180
Table 6.—Navy apprentice program experience, 1960–66, graduating class 180
Table 7.—Major fields of study of College of Guam students, 1964 and 1965 186
Table 8.—Academic years spent on Guam by College of Guam staff 187
Table 9.—Comparison of 1964 mean salaries, College of Guam and U.S. college personnel 188

Page

Table 10.—Average annual student enrollment, College of Guam 188
Table 11.—Projected College of Guam enrollment candidates based on Guam high school graduates 191
Appendix 6.—Local incentives to investment 193
A. Guam Finance & Development Corp 193
B. Tax Incentive Act 195
C. Guam Economic Development Authority 195
D. Appraisal 196
Appendix 7.—Local government requirements and resources 199
A. Government organization 199
B. Operating expenditures and employment by function 199
C. Capital outlays 202
D. Revenue sources 204
E. Meeting the fiscal requirements 207
Commercial port and public utilities agency figures (table) 199
Table 1.—Per capita government operating expenditures for selected functions, Guam (1964–65) and the United States (1963–64) 200
Table 2.—Government employment per 10,000 population, by function, Guam (July 1965) and United States (October 1964) 201
Expenditures and encumbrances as of July 1, 1965, of the major capital improvement program under the rehabilitation law (table) 202
Table 3.—General fund capital improvements and other projects 203
Table 4.—Rehabilitation Act programs—projected expenditures 203
Table 5.—Government of Guam general fund revenue, fiscal years 1959–65 205
Table 6.—Per capita general revenues, Guam (1964–65) and U.S. average (1963–64) 206
Appendix 8.—Federal assistance programs 211
A. Grants-in-aid 211
B. Emergency assistance 217
C. Shares revenues 220
Table 1.—Percent of general revenue of State and local governments which is of Federal origin 212
Table 2.—Distribution of grants-in-aid by major program (percent) 212
Table 3.—Federal grants per capita by major program 213
Table 4.—Federal financial assistance programs, fiscal year 1966 214
Table 5.—Cumulative status of Federal financial assistance projects under the Office of Emergency Planning, June 30, 1965 218
Table 6.—Rehabilitation Act projects 219
Bibliography 221
Appendix 9.—Summary of suggestions for promoting economic development of Guam, presented in public hearings to the Federal-Territorial Commission, March 1965 272

STATEMENT OF THE CHAIRMAN, COMMITTEE ON INTERIOR AND INSULAR AFFAIRS

MARCH 31, 1966.

To the Members of the House Committee on Interior and Insular Affairs:

Among the offshore flag area responsibilities of our committee is the territory of Guam in the Mariana Islands. Periodically, to keep abreast of our responsibilities, we visit Guam to obtain first-hand information that will be helpful to us in carrying out our obligations. We also call on Guam administrators and legislators, and officials from the executive departments and agencies, to brief us on events and progress that is being made in the territory.

Following the extensive damage caused by the typhoons of November 1962 and April 1963, Congress enacted Public Law 88–170 to provide for the rehabilitation of Guam through the construction of necessary public works, development and stimulation of trade and industry, and provision of community facilities. A maximum appropriation of $45 million in grants and long-term loans was authorized for utilization through June 30, 1973, in the amounts requested by the Governor of Guam with the concurrence of the Guam Legislature and the approval of the Secretary of the Interior.

Section 6 of the Guam Rehabilitation Act required the Secretary of the Interior and the Governor of Guam to prepare long-range economic development plans for the territory. Responsibility for the plans was delegated to the Federal-Territorial Commission for the Guam Long-Range Economic Development Plan. The Commission in turn decided to use the services of an economic consulting firm and in March 1965 awarded the contract for a comprehensive economic study of Guam to be used as the basis for the preparation of the long-range plans. The following reports present the findings and recommendations of that study.

I am certain we will find these reports a most useful means of understanding the need for a rehabilitation program for Guam.

WAYNE N. ASPINALL,
Chairman, House Committee on Interior and Insular Affairs.

LETTER OF TRANSMITTAL

U.S. DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D.C., March 14, 1966.

Hon. JOHN W. MCCORMACK,
Speaker of the House of Representatives,
Washington, D.C.

DEAR MR. SPEAKER: Transmitted herewith is the substantive portion of a final report on a long-range economic development plan for the territory of Guam as called for in section 6 of Public Law 88–170, the Guam Rehabilitation Act.

In an interim report of April 6, 1965, we informed you that a Federal-Territorial Commission had been created to supervise and coordinate the preparation of the required economic development plan. The resulting report consists of a three-volume study prepared by a private consulting firm under contract, supplemented by a letter of transmittal from the Commission setting forth specific comments on certain portions of that study. The final volume, consisting of supporting economic and statistical data, is not enclosed but will be transmitted as soon as received from the printer.

Both Governor Guerrero and I accept the analysis, findings, and recommendations of the contractor study, as modified by the comments of the Commission. We consider it an informative and fruitful basis for future private investment and governmental action looking toward Guam's economic development. We recognize, however, that we are dealing with a very dynamic aspect of territorial life and that many of the actions to achieve full economic development will be multilateral, involving the private business community, the local government of Guam, and the Federal Government. We would regard any economic plan, therefore, as a set of guidelines or feasible opportunities for business expansion which must be applied in a flexible manner, tested, modified, or even in some circumstances, rejected as time and experience dictate.

We also recognize that the plan, to retain its usefulness for the longest possible period, must be reviewed periodically and evaluated in terms of operating results. To that end, the Governor and I have agreed to maintain close, independent surveillance over developments in Guam over the next 12 or 15 months, specifically in terms of the objectives set forth in the planning report. At the end of that period, we are further agreed to undertake a joint review of actions taken and, if indicated, to decide upon any redirection of emphasis which seems necessary.

Sincerely yours,

STEWART L. UDALL,
Secretary of the Interior.

THE FEDERAL-TERRITORIAL COMMISSION FOR DEVELOPMENT OF A LONG-RANGE ECONOMIC PLAN FOR GUAM

MARCH 14, 1966.

To: The Honorable Stewart L. Udall, Secretary of the Interior; the Honorable Manuel F. L. Guerrero, Governor of Guam.

Subject: Economic development plan for Guam.

Section 6 of the act "to provide for the rehabilitation of Guam and for other purposes," approved November 4, 1963 (Public Law 88–170), requires the Secretary of the Interior and the Governor of Guam to prepare a long-range economic development plan for Guam and to transmit interim and final reports thereon at specified times.

On April 6, 1965, Secretary Udall forwarded to the President and the two Houses of Congress an interim report which described the contract procedure which had been agreed upon to produce the required plan. That report also indicated the kind and scope of study being conducted by the research contractor and the general status of the project at that time.

The contractor, Planning Research Corp., has now completed its work and submitted a final report. The resulting document, in three parts, has been thoroughly reviewed by the Federal-Territorial Economic Planning Commission. In fact, the Commission was in very close touch with the contractor throughout the study and, in particular, met frequently with the research team during the months when the report was being written. Two of the three volumes contain the narrative description, analysis, and recommendations. The third is an appendix document containing supporting statistical and other data.

The Commission recommends that the report of Planning Research Corp. be accepted as the basic planning instrument upon which Guam's economic future can be plotted. In so doing, however, we find it necessary to comment briefly or to express reservations on certain of the recommendations contained in the report itself. As so modified in this letter of transmittal, therefore, we urge that the enclosed volumes be submitted in compliance with the statutory directive that a "report on the plan" be submitted to the President and the Congress.

This report does not attempt, Soviet style, to set forth a precise blueprint for investment, development, and production over a specified period of time. We do not believe that planning of that kind is possible in a free enterprise system, and we do not think that Congress had that concept in mind when it directed that a plan be prepared. Rather, the report analyzes, both generally and specifically, the opportunities which are open to private enterpreneurship in the territory, and the measures which Government (both Federal and territorial) must take to foster and sustain such efforts. As such, we think it provides a realistic and highly useful set of guidelines for economic growth.

If one were required to identify in one phrase the single most critical factor affecting Guam's economic future it would have to be distance and isolation. All discussions begin and end with the importance of transportation and communications. Guam is literally at the end of a 6,000-mile lifeline for the majority of its requirements. For that reason, we regard as highly unrealistic and unacceptable the suggestion made in the report that the government of Guam be relieved of a burdensome function by leasing port operations to a private firm. The lessons of post-World War II Hawaiian experience are still too close to be dismissed lightly. The threat of widespread bankruptcies, economic collapse, and even starvation arising out of a dock strike is real and immediate in an island economy. Operation of this critical link by Government, using civil servants, is the only known device for protecting the public interest.

To a somewhat lesser degree, we have some doubts on one of the tax incentive suggestions presented in the report. The authors indicate that, since the Federal excise tax on articles manufactured in Guam is at the ultimate disposal of the territorial government, it might be waived or remitted to the manufacturer as an incentive to locate on the island. We are by no means sure that this is legally possible under existing law. But, even if we were, the whole question of excise taxes in the revenue structure of all the territories must be reexamined before reaching a decision on this matter. At the moment, we are inclined to believe the policy implications of the proposal for other areas would substantially outweigh any benefit to Guam. At best, therefore, this item must be deferred for more careful evaluation.

In accordance with the specifications provided to the research contractor, this report concentrates on the opportunities which exist for the development of a healthy, job-producing private economy and governmental policies and actions having a direct bearing thereon. Some of the governmental actions, especially in the field of education, will involve substantially increased expenditures for which additional revenues must be found. There must, therefore, be a heavy involvement of the Guam Congress, as well as the Governor, in discharging the responsibilities of government with respect to Guam's economic well-being. In the period since the Organic Act became effective, Guam has not relied exclusively on the revenues it derives from Federal tax collections, but has imposed substantial local levies to meet its needs. However, as the territory moves toward mainland standards of public service, it must also expect to assume a local tax burden comparable to that prevailing in mainland communities. Most immediately, this requires a reexamination of the relatively modest property tax rate now in effect.

Our final point of necessary comment involves an area omitted by the contract survey report—the adequacy of private lending resources. The report, not at all improperly, emphasizes the opportunities which will attract outside capital and management to add economic strength to the territory. At the same time, however provision must be made for the expansion of existing enterprises to the extent that they are able to participate in the general growth pattern. A shortage of locally available capital has penalized such expansion possibilities in the past. The reasons for this deficiency and the extent of capital needs for existing enterprises are not identified in the report; nor is there any discussion of the part which might be played by a develop-

ment bank of the kind that has proved highly useful in the more undeveloped areas of the world. Perhaps, as the economy expands as outlined in the report, there will be greater evidence of confidence on the part of existing banking institutions in making more capital available to local entrepreneurs. However, we regard this as a part of the economy requiring more thorough study and have urged that the Governor concentrate his own resources on it in the immediate future.

The preceding comment is illustrative of the fact that no economic study or plan should be regarded as final or static. It can only be a picture of the situation at a given time, to be regarded as a base document upon which to build dynamic action programs which will themselves change the economic picture portrayed in the study. Even as this research effort was being carried out, for example, the Guam community made significant economic decisions on its own motion, both public and private. Creation of a Guam Economic Development Authority, with broad powers to attract new industries, is a major example of this forward momentum. Legislative action to impose reasonable production quotas on certain items eligible for duty-free entry into the mainland market is also worthy of note. Within the past several days, it was announced that basic economy fares had been reduced by more than 10 percent ($295 to $265) for the Guam-Honolulu segment of transpacific air travel. Thus, one of the objectives sought by the report has been achieved, at least in part.

We should expect that change will be the hallmark of the time for Guam's economic life, especially if this report is to have the impact we anticipate. Change may, and undoubtedly will, involve errors as well as wise judgments. Moreover, as the report points out economic improvement for the community of Guam need not depend entirely on a gross increase in the level of business activity; replacement of alien labor by locally developed skills, substitution of locally produced goods and services for imports, and normal patterns of outmigration will all have a favorable influence on job opportunities in Guam. This is the way of a free economy and is to be encouraged rather than feared or subjected to excessive controls.

In the period immediately ahead, however, trends in the Guam economic scene should be watched very carefully both by the government of Guam and the Department of the Interior. We would urge most earnestly that a followup evaluation of the island's progress be conducted at the end of a year or 15-month period. Such an evaluation should be conducted jointly by the Secretary and the Governor in order to assess the progress made in implementing this report as well as to determine whether further measures are required to realize its goal and objectives.

Respectfully submitted.

ROBERT M. MANGAN, *Chairman*
(For the Commission).

INTERIM REPORT

APRIL 6, 1965

LONG-RANGE ECONOMIC DEVELOPMENT PLAN—TERRITORY OF GUAM

(Section 6, Public Law 88–170, Nov. 4, 1963)

Prepared by

FEDERAL-TERRITORIAL COMMISSION

ROBERT M. MANGAN, *Chairman*

CARLTON SKINNER, *Member*

GORDON E. RECKORD, *Member*

A. Introduction

As a result of the devastation caused in Guam by Typhoon Karen on November 11, 1962, this administration proposed to the Congress a massive loan and grant program to provide for the rehabilitation of Guam. The Congress subsequently enacted legislation (Public Law 88–170) which authorizes a $45 million loan and grant program providing for the construction of the necessary public works including the acquisition of real property, developing and stimulating trade and industry, and providing facilities for community life through a program of useful public works and community development. Funds appropriated to the Secretary of the Interior through June 30, 1973, are paid out by the Secretary in such sums as are requested by the Governor of Guam with the concurrence of the territorial legislature and the approval of the Secretary of the Interior.

The Congress, under section 6 of Public Law 88–170, further provided "The Secretary of the Interior and the Governor of Guam with the assistance of such departments and agencies of the Federal Government and the Government of Guam as the President and the Governor, respectively, may designate, shall prepare a long-range economic development plan for Guam." In addition, section 6 provides that "An interim report of the Secretary and the Governor on progress toward formulation of such plan shall be presented to the President and the Congress on or before September 1, 1964, or nine months from the date on which appropriations to carry out this Act first become available, whichever occurs later, and the final report on the plan shall be presented on or before July 1, 1965, or eighteen months from the date on which appropriations to carry out this Act first become available, whichever occurs later."

B. The Federal-Territorial Commission

House Report No. 692 (Committee on Interior and Insular Affairs), the legislative report on Public Law 88–170, included a recommendation that in the implementation of section 6 of the act, the Federal Government and the Government of Guam form a committee for the purpose of developing the long-range economic development plan for Guam. Acting on this recommendation, the Secretary of the Interior and the Governor of Guam established the Federal-Territorial Commission for the long-range economic development plan—Guam, hereinafter called the Guam Commission.

In view of the time limitations imposed by the Congress for the preparation of such plan, it was determined that a small commission would be more effective in accomplishing the task within such prescribed time limits. Thus a Commission of three was created to include the Honorable John A. Carver, Jr., then Assistant Secretary for Public Land Management, Department of the Interior, as Chairman; Mr. Carlton Skinner, the first civilian Governor of Guam and presently a private consultant, as the Guam representative; and Mr.

Gordon E. Reckord, Assistant Administrator for Planning and Research, Area Redevelopment Administration, Department of Commerce, as the third member. Mr. Samuel Heller, Deputy Assistant Director for the Virgin Islands and Guam, Office of Territories, Department of the Interior, was selected by the Commission to act as Secretary. This was believed to be a well-rounded committee since it provided in the person of Mr. Carver a top official from the Interior Department, which is responsible for the general development of the Territory of Guam, secondly, a Guam representative in the person of Mr. Skinner, who had intimate knowledge of the economic, social and political characteristics of Guam, and, lastly, in the person of Mr. Reckord, a Federal official with a highly developed technical knowledge of the techniques needed to accelerate economic growth of underdeveloped communities. Mr. Carver served as Chairman from the advent of the Commission on May 28, 1964 through February 20, 1965 when his new duties as Under Secretary of the Interior required that he relinquish his membership on the Commission to the Deputy Under Secretary, Mr. Robert M. Mangan. Mr. Mangan, the principal assistant to Under Secretary Carver, also brings the intimate knowledge and broad experience necessary to carry out Interior's role in the general development of Guam.

The Commission, at its first formal meeting, determined that a number of other Federal agencies should be represented at its subsequent meetings because of their special interests in the Territory of Guam or for particular assistance such agencies might afford the Commission in developing the economic plan. Upon express invitation, representatives from the following departments were present as observers at subsequent meetings: Department of Labor, Department of Agriculture, Department of the Navy, Small Business Administration, and Department of State.

The Commission's main work up to the present time consisted of (1) developing an Invitation for Proposals for an Economic Study of Guam to be sent to a number of recognized economic consultant firms, (2) evaluating the proposals received with the view to selecting that proposal which seemed most promising insofar as developing an effective economic plan for Guam, and (3) negotiating with the selected firm so as to award a contract in accordance with Federal statutes and regulations.

C. Invitation for Proposals

The Commission, in its initial deliberations, recognized that the current Guam economy is almost wholly dependent on servicing the large military installations there. Coupling this factor with the massive public investment program authorized under the Guam Rehabilitation Act (Public Law 88–170), the Commission opined that any study of Guam should be directed toward outlining the potential for greatly increased private investment. Successful consummation of such increased private investment, admittedly a difficult task in view of Guam's somewhat limited resources and need for greatly improved labor skills within its local population, would go a long way toward making the Guam economy more viable, with characteristics more like the average mainland community in the United States. Previous studies had fairly accurately pictured the basic economic features of the present Guam economy and had outlined in considerable extent

the nature of its natural resources and manpower skills. Therefore, the Commission concluded, any economic study should be geared to an extensive study as to which private enterprises offered the most growth potential in Guam.

The Commission further determined that, while there were probably sufficient Federal expertise and technical disciplines scattered among the many Federal agencies which, if properly organized, could produce both a worthwhile study and an economic development plan, it would be more advantageous to the Government of Guam if an economic team already in being was made available for the study, and it further determined that such economic teams were already existent among the experienced economic consultant firms which have sprung up since World War II. Another factor which swayed the Commission's determination to seek the services of such private economic firms was the fact noted above that the study should focus its emphasis on private investment opportunities. It is here that a private economic firm presumably would have the practical experience in seeking out such investment opportunities that normally do not accrue to Federal technical consultants. Further, it was believed that the Government of Guam might profitably use the consultants after the completion of the study for purposes of seeking out and developing specific private investments as a practical implementation of the economic plan.

Based on the above, there was developed the "Invitation for Proposals for Preparing Long-Range Economic Development Plan—Territory of Guam" (exhibit A). The aim of the plan as outlined on the first page of the invitation is to develop a viable economy so as to provide alternative economic activity which would tend to balance the Guam economy. One other important aspect of the invitation stressed that the firm selected would be required to encourage the utmost local participation, both in the Government and private sectors, through interviews, conferences, and other means designed to achieve this purpose.

The invitation was then sent to more than a dozen well known, and qualified consultant firms with experience related directly or indirectly to economic development in specific communities. In addition, invitations were sent to other firms upon their request.

D. The Contract

Twelve firms submitted proposals as a result of the invitation sent out by the Guam Commission. To assist the Commission in the evaluation of these proposals a complete set of the proposals were sent to the Area Redevelopment Administration, Small Business Administration, and the Agency for International Development. These latter agencies then had informal appraisals made of the proposals by economists on their staffs. The economists were asked and did provide a rating list of the proposals and this was used by the Commission to determine those proposals which appeared to offer the greatest potential for developing a well designed economic development plan. The Commission then requested five of the firms which submitted proposals to make an oral presentation to the commission to enable it to better judge their proposals. The selection of the top proposal was admittedly difficult because of the high caliber of the proposals.

Finally the Commission determined that the proposal submitted by the Planning Research Corp., 1100 Glendon Avenue, Los Angeles, Calif., seemed to offer the greatest potential. As a result, negotiations were conducted with that firm and a contract was agreed to and executed on March 10, 1965.

Perhaps the main purpose of the study can best be summed up by the paragraph cited in A–1 on page 2 of the contract which states "that a long-range economic development plan for Guam shall be designed to rebuild Guam into a modern American community, to operate primarily for the benefit of the local citizens and to provide either full employment for Guam's expanding population or the optimum level of employment that can be attained at adequate wage levels in the activities which the study recommends for development or expansion."

E. Public Hearings in Guam

On March 22, 1965, the Commission and two members of the Planning Research Corp. (the economic consultant firm) arrived in Guam for the purpose of conducting public hearings. These hearings were instituted by the Commission so as to encourage participation by the local citizens in the development of the long-range economic plan. Early knowledge of the objectives of the plan and the opportunity to voice specific suggestions were believed by the Commission to be vital to the eventual acceptance of a long-range plan by the majority of the Guam community. Another worthwhile and necessary purpose of these public hearings was the opportunity to present to the leading members of the local community, the economic consultants hired by the commission to conduct the economic study.

A public notice (exhibit B) was placed in the three most widely distributed publications; namely, the Guam Daily News, the Guam Times Weekly, and the Umatuna Si Yuus, a Catholic periodical with a large circulation. Prior to the public hearings which were held on March 24 and 25, the commission met with department heads of the local government, each of whom presented and discussed 5-year programs for his particular department.

On March 23, a formal meeting with the Guam Legislature ensued at which the chairman of the Commission outlined the Commission's responsibilities and individual members of the legislature then aired their views as to what was needed for the future economic growth of Guam.

The final presentations and discussions prior to the general public hearings, involved the municipal commissioners each of whom represents a particular village or town in Guam. These commissioners, who serve as the liaison with the government and their individual communities, expressed much interest in agricultural development including the need for modern farm equipment at reasonable rental or cost.

The public hearings were conducted on March 24 and 25. The first day's hearings were devoted to the respective boards of directors of the Guam Chamber of Commerce and the Guam Contractors Association. Both of these organizations presented specific requirements which they believed were essential to sustained economic development in Guam. On the second day of the public hearings, individual businessmen and women and other leaders of the community were heard. Much discussion centered around the potential

for tourism as a stimulus to economic growth in Guam; a formal outline of the tourist potential was given by the executive director, Guam Tourist Commission.

The importance to the Guam economic base of the large-scale military expenditures led the Commission to discussions with the Commander, Naval Forces, Marianas, and the Commanding General, 3d Air Division, Strategic Air Command. The talks centered around the possibility of improving the present services now provided to the military by the Guam civilian sector and the developing of new services for which the respective military heads believed there was a need which the local resources could provide.

Recognizing the potential of improved trade and marketing relationships between Guam and the adjacent Trust Territory of the Pacific Islands communities, the Commission met with the High Commissioner of the Trust Territory and his staff, who outlined the latter government's present plans for economic growth.

At all the hearings and meetings the Commission requested full documentation of the presentations to be made a part of the material to be used by the economic consultant firm for further detailed study.

EXHIBIT A

INVITATION FOR PROPOSALS FOR PREPARING LONG-RANGE ECONOMIC DEVELOPMENT PLAN, TERRITORY OF GUAM

SCHEDULE I

Statement of work, general requirements, and background data

The Office of Territories, Department of the Interior, acting for the Commission for the Guam Long-Range Economic Development Plan (hereafter referred to as the "Commission"), seeks proposals for the preparation of a long-range economic development plan for the territory of Guam. The Commission is charged with this responsibility by the Secretary of the Interior and the Governor of Guam.

As an immediate result of the physical devastation visited upon the territory of Guam by Typhoon Karen in November of 1962 and Typhoon Olive in April of 1963, this administration proposed and the Congress approved a large scale rehabilitation program designed to rebuild Guam into a modern American community. The affirmative response of the Congress is outlined in the Guam Rehabilitation Act (Public Law 88-170, approved November 4, 1963), which provides for a maximum loan and grant program of $45 million to Guam to be allocated through 1973.

Section 6 of this act requires the Secretary of Interior in collaboration with the Governor of Guam to prepare a long-range economic development plan to include overall aspects of the entire economy of the territory.

Passage of the Rehabilitation Act presents an opportunity for the territory of Guam and for public officials and private businessmen to strengthen the economic base of the territory, to make new public and private investments related to that economic base and select from the variant courses open to them the course of action most likely to accomplish these goals.

It is not intended, therefore, that the plan be a critical field analysis in detail of current conditions on the island. Instead it should be a description of positive actions that can be taken by individuals and public and private organizations in the Guam economy that will result in substantial investment within the short range. Advantage should be taken of all special regional advantages such as location, special relations to the trust territory, U.S. customs status, foreseeable Federal expenditures, etc. However, the aim of the plan is to develop a viable economy, insofar as possible, outside the realm of support of military functions, so as to provide alternative economic activity which will tend to balance the Guam economy.

It will be necessary to anticipate the amount and probable source of additional capital and investment needed to achieve a balanced economy and to develop and stimulate trade and industry. To the extent possible these estimates should be accompanied by more intensive feasibility studies in such detail of presentation

that they will serve as investment guides for determination of rough priorities, yet adequate for early investment decisions.

There is attached in schedule II an outline for the submission of a program proposal for the development of a plan which, it is felt, will accomplish these objectives.

In carrying out these functions, the contractor will be expected to work closely with the Commission or its designees in developing the plan. The contractor will be required to encourage the utmost local participation, both government and private sectors, through interviews, conferences, and other means designed to achieve this purpose.

In developing the economic plan, the contractor will be expected to give primary emphasis to item D 3 (schedule II) which is concerned with private investment opportunities.

Because of specific time requirements for submission of report to the Congress, the contractor's final report must be made no later than 9 months after the date of the award.

The government contract obligations noted in schedules IV and V will apply.

Background information on the territory of Guam is enclosed in a brochure entitled "Territorial Responsibilities" and in the 1963 Annual Report of the Governor of Guam. The following bibliographical material is available for inspection at the Department Library, U.S. Department of the Interior, Washington, D.C., by calling 343-5815.

"The Future of Tourism in the Pacific and Far East," U.S. Department of Commerce, Bureau of Foreign Commerce.

"Guam: Its Economy and Selected Development Opportunities," Stanford Research Institute, Menlo Park, Calif.

"Study of Apra Harbor," Tudor Engineering Co., San Francisco, Calif., 1964.

"Glimpses of Guam, 1964," The Navy Relief Society.

"Overall Economic Development Program for Guam, June 1962.

"Coconut Industry Feasibility Survey for Guam, M.I.," Coproducts Corp., San Francisco, Calif., August 1961.

"Guam Population, 1901-85," Guam Department of Land Management, 1962.

"The Agricultural Needs of Guam, Mariana Islands," Report of a U.S. Department of Agriculture survey group, 1958.

"Survey of Manpower Resources, 1964-70," Territory of Guam, June 1964.

Interested parties must submit complete proposals in six copies by no later than 2 p.m. on November 24, 1964, to the office of territories, Department of the Interior, Room 6514, Washington, D.C.

SCHEDULE II. PROGRAM OUTLINE

A. Abstract and objectives

A brief one-page statement on the origin of the study, the general objectives and anticipated use of the results and a three- or four-sentence statement of the nature of the findings.

B. Findings and conclusions

A topical statement of major conclusions reached by the contractors, should indicate the general scale of the economy of the island, the opportunities for investment, the nature of investment requirements, general nature of necessary government action and support and essential priority determinations and needed actions with assignments indicated

C. The Guam economy

1. A general description of the island's economy, its organization, the principal contributors, the size of the separate parts including generalized development in the sectors since 1950 plus anticipated trends for the immediate and medium range. These trends should be related to population and income, assuming continued current international conditions. Continuation of current levels of U.S. defense expenditures should be assumed.

2. The position of Guam in the economy of the Western Pacific should be explored with general observations on the effects of future trade with the Trust Territory of the Pacific Islands, other Pacific countries, the United States, and the world.

3. An analysis should be made of recent and current manpower studies with the view to relating the current and potential labor resources essential to the private investment requirements in D. 3 below.

used in arriving at such investment requirements should be included under "Methodology" in F appendix below). This section should cover private and public investment as shown below. However, under the general heading there should be included an explanation of why such an analysis is necessary. The effects of decisions in the private and public sectors should be described and should show that effective private investment will wait on decisions made in the public sector or conversely that public investment will encourage certain private actions.

2. *The public sector.*—An analysis should be made of the public sector requirements including: public utilities, power and water, education and welfare services, port and transportation, including roads, housing, economic development and business financing, administration, etc. Account should be taken of recent and concurrent studies of any of these areas.

3. *Private investment opportunities.*—This section of the program is the most important part of the contract activity. This section should be prepared as a practical working guide for potential private investors. This section will be a fully annotated list of private investment opportunities by general type but in such detail that appropriate governmental and private action will be encouraged. It should include the name and class of the activity, general market possibilities, the nature and amount of investment needed. Contingent industry problems should be described. Facility requirements should be noted with the kind and amount of investment incentive available and needed.

Manpower requirements should be related to the evaluation made in C. 3 above.

A special evaluation should be made of the tourist potential.

A further incomplete list would include but not be limited to: service and industries, resource development including offshore fishing; livestock and agriculture, including processing; small manufacturing, especially import substitution; commerce, including transportation, warehousing, etc.

Private economic development projects recommended should be listed in priority order based on degree of probable success, short term initiation probability and potential for greater return to Guam economy.

E. Government and private actions for promoting investment

1. *Local government action.*—A description should be made of the special development role the Government can play in enhancing its relationships with private business investors, taking into account accomplishments in other jurisdictions such as Puerto Rico, the Virgin Islands, and mainland communities.

2. *Federal assistance programs.*—Federal assistance programs to include those of the Small Business Administration, Agriculture Department, Area Redevelopment Administration, etc., should be screened to see whether the presently authorized programs are being fully utilized or where presently congressional or executive department action is needed such is pointed up for possible development.

3. *Private assistance to investment.*—An analysis of possible assistance, both local and elsewhere, to include financing through loans, investment companies, development corporations, banks, technical help on product development and marketing, etc.

F. Appendix

Statistical supplements.
Methodology.
Sources of information.

SCHEDULE III. SPECIFIC PROPOSAL DATA REQUIREMENTS

A. Personnel requirements

The offerer shall submit a schedule reflecting an estimate of the personnel requirements to include details as to key personnel to be employed providing titles, experience, man-months of employment and monthly rate of compensation; total man-month requirements of other subordinate personnel should be included.

The estimate should also reflect the number of personnel required on a substantially full-time basis on Guam and the additional personnel that you will need to employ from time to time for specific purposes which purposes should be specified in the estimate. The employment of such additional persons shall be subject to the approval of the Commission which reserves the right to obtain in any given instance qualified personnel from Federal or international agencies or other sources on a consulting or a loan basis. Examples of such personnel might be a fisheries consultant or an agricultural consultant.

Due to the distant location for the performance of the contract, offerer should

from Guam and the estimated duration of each trip. It will be assumed that local clerical personnel will be employed on Guam obviating the necessity of transporting these subordinate personnel from elsewhere.

B. Work schedule, time requirements

1. An outline of the work schedule and procedures to be employed shall be submitted as part of the proposal.
2. Progress reports will be made in a manner and with a frequency to be agreed upon at the time of final negotiation of a contract.
3. A prefinal submission of 15 copies of the completed report prior to its final printing shall be made to the Commission for review within 240 days after notice of award.
4. A final submission of 150 copies of the report shall be made 21 days after approval of the prefinal submission. The contractor will have reviewed all prefinal review comments and corrected all deficiencies as required in the final report.

C. Services available from Government sources

1. Office space with desks, tables, typewriter, calculator, a safe, and storage vault facilities for storage of plans, as available.
2. A reasonable amount of available reproduction service, such as working drawings and check and review prints, excluding reproduction of the final copies of the report.
3. A reasonable amount of message traffic for official business.

D. Rejection of proposals

The Commission reserves the right to reject any or all proposals.

SCHEDULE IV. REPRESENTATIONS (OFFERER MUST COMPLETE THE FOLLOWING REPRESENTATIONS)

The offerer represents that: (Check appropriate boxes)

(a) He ☐ (is) ☐ (is not) a small business concern. (See Code of Federal Regulations, title 13, pt. 121, as amended, which contains the detailed definitions and related procedures.)

(b) He ☐ (has) ☐ (has not) employed or retained any company or person (other than a full-time bona fide employee working solely for the proposer) to solicit or secure this contract.

(c) He ☐ (has) ☐ (has not) paid or agreed to pay any company or person (other than a full-time bona fide employee working solely for the proposer) any fee, commission, percentage or brokerage fee, contingent upon or resulting from the award of this contract; and agrees to furnish information relating to (b) and (c) above as required by the contracting officer.

(d) He operates as an ☐ (individual) ☐ (partnership) ☐ (joint venture) ☐ (corporation, incorporated in the State of _____) ☐ (other).

(e) He ☐ (is) ☐ (is not) owned or controlled by a parent company as described below:

(NOTE 1.—For the purpose of this proposal, a parent company is defined as one which either owns or controls the activities and basic business policies of the proposer. To own another company means the parent company must own at least a majority (more than 50 percent) of the voting right in that company. To control another company, such ownership is not required; if another company is able to formulate, determine, or veto basic business policy decisions of the proposer, such other company is considered the parent company of the proposer. This control may be exercised through the use of dominant minority voting rights, use of proxy voting, contractual arrangements, or otherwise.)

(NOTE 2.—If the answer to the above is in the affirmative, state the name and principal office address of the parent company.)

Name _____

Address _____

City _____

The employer's identification number (E.I. No.) (Federal social security number used on Employer's Quarterly Federal Tax Return, U.S. Treasury Department, form 941) is as follows:

E.I. No. of Proposer _____

E.I. No. of Parent Company (if any) _____

(f) That he ☐(has) ☐(has not) participated in a previous contract or subcontract subject to either the equal opportunity clause herein or the clause originally contained in section 301 of Executive Order No. 10925; that he ☐(has) ☐(has not) filed all required compliance reports; and that representations in-

dicating submission of required compliance reports, signed by proposed subcontractors, will be obtained prior to subcontact awards.

Signature

SCHEDULE V

Terms and conditions

Provision will be made for progress payments, if contractor desires, in any contract to be negotiated hereunder.

The contract to be negotiated will include, as a minimum, the following provisions. Additionally, provisions regarding (1) modifications or changes; (2) progress payments; (3) assignment of claims; and (4) termination will be developed in final contract negotiations.

Bond requirement

The contractor shall furnish a bond with such surety or sureties as shall be satisfactory to the Commission in the sum of (sum to be negotiated), conditioned upon the faithful performance of each and every covenant and agreement to be performed by the contractor under the provisions of this agreement. If any surety upon any bond furnished in connection with this agreement becomes unacceptable to the Commission or if any such surety fails to furnish reports as to his financial condition from time to time as requested by the Commission, the contractor shall promptly furnish such additional security as may be required from time to time to protect the interests of the Commission and of persons supplying labor or materials in the prosecution of the work contemplated by this agreement. Failure to furnish such additional security shall be deemed a default.

Disputes

(a) Except as otherwise provided in this agreement, any dispute concerning a question of fact arising under this agreement which is not disposed of by agreement shall be decided by the Commission, which shall reduce its decision to writing and mail or otherwise furnish a copy thereof to the contractor. The decision of the Commission shall be final and conclusive unless, within 30 days from the date of receipt of such copy, the contractor mails or otherwise furnishes to the Commission a written appeal addressed to the Secretary of the Interior. The decision of the Secretary or his duly authorized representative for the determination of such appeals shall be final and conclusive unless determined by a court of competent jurisdiction to have been fraudulent, or capricious, or arbitrary, or so grossly erroneous as necessarily to imply bad faith, or not supported by substantial evidence. In connection with any appeal proceeding under this clause, the contractor shall be afforded an opportunity to be heard and to offer evidence in support of its appeal. Pending final decision of a dispute hereunder, the contractor shall proceed diligently with the performance of the agreement and in accordance with the Commission's decision.

(b) This "disputes" clause does not preclude consideration of law questions in connection with decisions provided for in subsection (a) above: *Provided*, That nothing in this agreement shall be construed as making final the decision of any administrative official, representative, or board on a question of law.

Records, audits, and inspection

(a) The contractor agrees to maintain books and records in such detail as will properly reflect all items of costs and will retain directly pertinent books, documents, papers, and records in support thereof and otherwise related to this contract and subcontracts hereunder, and further agrees to preserve such books, records, and documents during the life of this contract and until 3 years after final payment, and to permit the contracting officer and the Comptroller General of the United States, or any of their authorized representatives, to examine and audit the same at all reasonable times during the said period. In addition, the contractor shall permit the contracting officer, or any of his authorized representatives, at all reasonable times to inspect the facilities, activities, and work pertinent to the contract, and to interview personnel of the contractor engaged in performance of the contract to the extent the contracting officer may deem necessary.

(b)(1) The provisions of paragraph (a) above shall be applicable to and included by the contractor, and by subcontractors of whatever tier, in each subcontract hereunder that is not on a firm fixed-price basis.

(2) The contractor shall include in each of his subcontracts, placed on a firm fixed-price basis, a provision to the effect that the subcontractor agrees that the Comptroller General of the United States or any of his duly authorized represent-

atives shall, until the expiration of 3 years after final payment under the subcontract, have access to and the right to examine any directly pertinent books, documents, papers and records of such subcontractor involving transactions related to the subcontract. The term "subcontract" as used in this subparagraph (2) excludes (i) purchase orders not exceeding $2,500, and (ii) subcontracts or purchase orders for public utility services at rates established for uniform applicability to the general public.

Excusable delays

In respect to those obligations of the contractor which are to be performed within a stipulated period of time, the contractor shall not be charged with noncompliance with any of such provisions due to unforeseeable causes beyond the control and without the fault or negligence of the contractor including, but not restricted to, act of God or of the public enemy, acts of the Government, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather, and delays of another contractor due to such causes, if the contractor shall, within 10 days from the beginning of any such delay, notify the Commission in writing of the causes of delay, who shall ascertain the facts of the extent of the delay and extend the time for compliance, with the particular obligation affected by such cause of delay.

Nondiscrimination in employment

During the performance of this agreement, the contractor agrees, as follows:

(a) The contractor will not discriminate against any employee or applicant for employment because of race, creed, color, or national origin. The contractor will take affirmative action to insure that applicants are employed, and that employees are treated during employment without regard to their race, creed, color, or national origin. Such action shall include, but not be limited to, the following: Empoyment, upgrading, demotion or transfer; recruiting or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training including apprenticeship.

(b) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, or national origin.

(c) The contractor will comply with all provisions of Executive Order No. 10925 of March 6, 1961, as amended, and of the rules, regulations, and relevant orders of the President's Committee on Equal Employment Opportunity created thereby.

(d) The contractor will furnish all information and reports required by Executive Order No. 10925 of March 6, 1961, as amended, and by the rules, regulations, and orders of the said committee, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the committee for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(e) In the event of the contractor's noncompliance with the nondiscrimination clauses of this agreement or with any of the said rules, regulations, or orders, this agreement may be cancelled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 10925 of March 6, 1961, as amended, and such other sanctions may be imposed and remedies invoked as provided in the said Executive order or by rule, regulation, or order of the President's Committee on Equal Employment Opportunity, or as otherwise provided by law.

(f) The contractor will include the provisions of paragraphs (a) through (f) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the President's Committee on Equal Employment Opportunity issued pursuant to section 303 of Executive Order No. 10925 of March 6, 1961, as amended, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: *Provided*, however, that in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the contractor may request the United States to enter into such litigation to protect the interest of the United States.

Officials not to benefit

No Member of or Delegate to Congress or Resident Commissioner shall be admitted to any share or part of this agreement, or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this agreement if made with a corporation for its general benefit.

Covenant against contingent fees

The contractor warrants that no person or selling agency has been employed or retained to solicit or secure this agreement upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the contractor for the purpose of securing business. For breach or violation of this warranty the Government shall have the right to annul this agreement without liability or in its discretion to deduct from the contract price or consideration, or otherwise recover, the full amount of such commission, percentage, brokerage, or contingent fee.

SCHEDULE VI

Negotiation and award procedures

The Commission will select not more than five offerers with whom negotiations will be carried on before a contract is awarded. Previous experience on the part of the offerers in the performance of comparable work will be considered in making selections as will:

1. The business reputation and responsibility of the offerers.
2. The method and work schedule to be utilized in performing the services required.
3. Ability of the offerer to furnish services within the time allowed.

EXHIBIT B

The Federal-Territorial Commission for Development of a Long-Range Economic Plan for Guam

Announces

PUBLIC HEARING

ON CURRENT AND FUTURE ECONOMIC OPPORTUNITIES AND PROBLEMS OF THE TERRITORY OF GUAM TO BE HELD

ON

MARCH 24 AND 25, 1965, FROM 9 A.M. TO 12 NOON, AT THE GUAM CONGRESS BUILDING IN AGANA

The Commission solicits suggestions as to positive actions that could be taken by individuals and by private or public organizations that will help to balance and strengthen the economy of Guam. Particularly welcome are ideas about opportunities for feasible new investment to employ and improve the productivity of the island's natural or human resources and thereby stimulate the growth of private trade and industry. Opinions and evidence concerning obstacles to such investment—and ways of overcoming them—are similarly important. It is requested that the contributions, so far as possible, deal with specific subjects—sea and air transportation of persons and cargo, tourism, wholesale trade and goods storage or handling, manufacturing or processing operations, availability of funds for investment, etc.

Interested persons are invited to present responsible opinions and other relevant information to the Commission in open meeting. Presentation should be prepared in advance, with a duplicate copy for the Commission's use. To allow all interested persons and organizations to be heard, presentations will be limited to 15 minutes for each speaker. Written testimony of any length may be submitted.

ECONOMIC DEVELOPMENT OF THE TERRITORY OF GUAM

PART 1

Introduction

With wrenching abruptness, World War II and its aftermath initiated in Guam an economic, social and political transformation that will require years more of adjustment to work itself out. Forty-odd years of somnolence as an unimportant outpost under a paternalistic military administration left Guam a slow-paced, subsistence-oriented community, ill-prepared for the major stresses to which it has been subjected in the last two decades. Viewed in this perspective, it is most remarkable and a tribute, certainly, to the resilience and adaptability of the people of Guam, that so much has been accomplished in only 15 years of self-government (and only 3 years of free access, unimpeded by military security clearances). Yet the future will be even more demanding as economic needs quicken, and there is no time for pause, whether to consolidate past gains or to rue their cost in older social values.

The present level of economic and political achievement stems from the largely artificial opportunities created by the exigencies of U.S. defense requirements in the western Pacific, in which Guam now plays an important part. Such an outcome is, of course, no less desirable for having been largely fortuitous. However, the shift to a dynamic economy where nearly everyone works for money, wages or profits makes real income and welfare directly dependent upon the availability of jobs, and this constraint will be increasingly felt as the former tradition of family and community mutual help continues to give way to more pecuniary relationships. Unemployment has not thus far been a problem; but a rapid rate of population growth, together with a dependence upon an almost exclusively military economic base, means that the present economic structure could be maintained in the long run only by expanding Federal spending in Guam at a rate similar to the growth of the labor force. Such a development is not inconceivable, but it would be sheer folly to count on it.

Following the extensive damage caused by the typhoons of November 1962 and April 1963, the Congress enacted Public Law 88–170 (November 1963) to provide for the rehabilitation of Guam through construction of necessary public works, development and stimulation of trade and industry, and provision of community facilities. A maximum appropriation of $45 million in grants and long-term loans was authorized for utilization through June 30, 1973, in the amounts requested by the Governor of Guam with the concurrence of the territorial legislature and the approval of the Secretary of the Interior. Section 6 of the same act required the Secretary of the Interior and

the Governor of Guam to prepare a long-range economic development plan for the territory. Responsibility for the plan was delegated to the three-member Federal-Territorial Commission for the Guam Long-Range Economic Development Plan. The Commission in turn decided to use the services of an economic consulting firm and in March 1965 awarded the contract for a comprehensive economic study of Guam, to be used as the basis for preparation of the long-range plan. This report presents the findings and recommendations of that study.

The plan is intended to develop in Guam an economy having maximum viability should future military expenditures level off or decline. The desired end result was, in brief, a consistent series of recommendations on feasible government and private actions and investments that would accelerate Guam's progress toward the goal of becoming a modern American community, based to the greatest degree possible upon development of the economy's private sector. In structuring and conducting the study, however, it became necessary to interpret this broad statement of purpose in the light of two important practical considerations.

First, it is clear that a long-range economic development plan, adopted at a specific point in time, can hardly be treated as a detailed program that will remain valid in all its aspects over a period as long as 10 years. Rather, it can be no more than a carefully considered strategy requiring occasional amendment and continual attention to tactics as conditions change and unanticipated situations arise. The latter functions are the responsibility of planning, viewed as a continuous governmental-administrative process required to carry out the strategy embodied in the plan (or its successors). The success of the plan is no more dependent upon the wisdom of its strategy than it is upon the quality of its execution. Government is important in Guam—far more so than in mainland communities—and its performance in taking advantage of available possibilities will be a major determinant of Guam's future progress. For this reason, it was felt that the study should not ignore opportunities for recommendations directed toward improving the environment and practices of government planning in Guam.

Second, the statement of a goal does not guarantee that it is unconditionally attainable. It is impossible in any circumstances to anticipate all the influences on the economy that will work for or against the hoped-for outcome; necessary decisions and actions by individuals may or may not be taken; priorities may need to be revised simply because resources or prerequisite conditions do not materialize as expected. In a community as small and relatively isolated as Guam, the consequences of such errors could be especially serious, and a premium should be placed on flexibility in the community's preparations for the future. Thus, it was also felt that account must be taken of the possibility that the growth of the population and labor force might outrun the employment opportunities capable of being provided by private sector development. Replacement of temporary alien and other off-island workers by local residents could take up part of any such slack; but if adequate employment opportunities are not available to qualified residents who wish to participate in the local work force, then the only alternative for them will be to leave Guam to seek jobs elsewhere—as many have already done, after the typical pattern of adjustment in other U.S. communities.

To compete effectively in United States or any other employment markets, such migrants must be well educated or well trained in manual vocations, even though this means a substantial export of capital with each migrant in the form of locally invested educational services. In any event, improved education and vocational training will also be necessary to prepare more local citizens to take over skilled blue-collar and white-collar jobs now held by off-islanders and to provide the kind of government and business leadership that is required. All this, it was felt, pointed up the need for special emphasis upon the education and motivation of young people as a key to progress which will require special and continuing attention in the island's planning.

The major effort, however, was spent upon the evaluation of (1) possible new sources of private basic employment in the form of activities that would replace imports or increase exports of goods and services; and (2) government actions, policies, investments and revenue sources that would facilitate the development of such activities in Guam. The outcome of these investigations may be characterized as moderately hopeful. Certainly it is fair to say that definite opportunities exist for feasible private investments in basic activities, mainly in tourism and in the assembly of imported components into products for tariff-free export to the United States and, to a lesser degree, in agriculture. Whether these opportunities and the secondary activities they would support are large and numerous enough to absorb the longrun increase of the labor force, however, one cannot say. There is also a question whether the income levels derivable from some of the contemplated activities are consistent with the commitment to strive for modern U.S. economic standards. But such uncertainties face any developing community. Vigorous efforts are certainly appropriate to exploit the possibilities already visible and to discover others.

Yet, as already indicated, we do not believe that Guam can afford to place all its bets unhedged upon the potential of the private sector, nor to suppose that its further development will come as easily as that which has already occurred on the basis of the public sector expansion. The great progress made since the ravages of World War II has its costs: Guam has no choice but to intensify the preparation of its citizens for full participation in the economic growth and improvement that is anticipated for all Americans, even (or especially) if that participation, for many of them, must take place elsewhere. The dual tasks of bringing jobs to the people and of equipping the people for skilled jobs will test the abilities and resources of government in Guam for years to come. But, in our judgment, it can be done.

I. THE BASIS FOR GROWTH

A. Economic Base and the Private Sector [1]

Guam's total population is estimated to be at least 73,000, of which nearly 50,000 live in the civilian community. A clear demarcation cannot be drawn between the civilian and military communities because military and Federal civil service personnel and their dependents living on the military bases make use of civilian business establishments, schools and other public services provided by the government of Guam. The base populations also contribute workers to the civilian community and provide employment as well as other services and facilities utilized by local residents and the government of Guam. Prior to World War II, when the U.S. military presence was of incomparably less direct economic significance, the major means of support of Guam's 22,000 people was what might be termed semicommercial agriculture. Since World War II, and especially since the establishment of civilian government in 1950, a modern money economy has developed on the basis—almost exclusively—of the employment directly and indirectly provided by military and other Federal expenditures.

The nature of the economy supported by this Federal base is suggested by table 1, which compares the industrial distribution of postwar employment in Guam with the corresponding minimum percentages expected for each industrial category in a community of 50,000 on the basis of evidence from a 1950 sample of U.S. cities. These minimum percentages are interpreted as approximations of the purely nonbasic [2] components of each activity category; percentages in excess of those indicated are treated as approximations of the basic [3] components. The data serve to illustrate what is obvious to most adults in Guam: government employment and construction (largely government financed) are virtually the only elements of the economic base. The exceptions to this at present are of trivial importance: mainly transportation and wholesaling services embodied in goods transshipped or reexported to the trust territory; [4] some portion of the commercial airline and overseas communications employment to the extent that Guam is a necessary link in the systems rather than merely a consumer of their services; and the value added locally in goods and services sold to the military by local vendors.

---

[1] This section is based upon app. 1. Following sections are similarly keyed to the appendixes containing more detailed discussion and supporting materials for each. All appendixes are in pt. 3 under separate cover.

[2] Nonbasic (or local service) activities are those which are performed within any given community solely to meet needs or demands within the community. Basic activities are those which produce goods or services that are "exported" in the sense that their sale brings money into the community from outside sources. Any given activity may contain both basic and nonbasic components. Both logic and empirical evidence insist that the economic growth of a modern community depends on its ability to replace imports or increase exports of goods and services. Size of community is the most critical factor in import replacement, however, and size in turn depends upon the growth of basic employment.

[3] See footnote 1, above.

[4] Much of the "excess" percentage in transportation in Guam in 1950 is attributable to employment at the commercial port and arises simply from the fact that Guam is an island.

61-092—66——3

TABLE 1.—*Distribution of employment*

	1949		1960		Minimum for communities of 50,000 (1950) (percent of total)	"Excess" percentage for Guam (1960)
	Number	Percent of total	Number	Percent of total		
Agriculture, forestry, fisheries	1,189	6.4	420	2.4	0.6	1.8
Mining	38	.2	33	.2		
Construction	6,269	33.6	5,257	30.5	3.6	26.9
Manufacturing	401	2.1	502	2.9	4.2	
Durable	149	.8	213	1.2	1.6	
Nondurable	240	1.3	289	1.7	2.6	
Not specified	12	.1				
Transportation, communication, and other public utilities	2,750	14.7	1,197	7.0	8.7	3.3
Transportation	2,511	13.4	1,038	6.0		
Water transportation	2,117	11.3	598	3.5		
Air transportation	71	.4	214	1.2		
Other	323	1.7	226	1.3		
Communications	58	.3	80	.5		
Utilities and sanitary services	181	1.0	79	.5		
Wholesale and retail trade	1,837	9.8	2,319	13.5	14.4	
Wholesale	244	1.3	283	1.6	1.6	
Retail	1,593	8.5	2,036	11.9	12.8	
Eating and drinking places	480	2.6	490	2.8		
Other	1,113	5.9	1,546	9.1		
Fire	85	.5	153	.9	1.7	
Business and repair services	362	1.9	206	1.2	1.5	
Personal services	998	5.3	643	3.7	3.3	.4
Private household	425	2.3	280	1.6		
Laundering, cleaning, dyeing	437	2.3	214	1.2		
Other	136	.9	149	.9		
Entertainment and recreation	68	.4	240	1.4	.5	.9
Professional and related services	943	5.1	1,669	9.7	5.0	4.7
Medical and other health	357	2.0	492	2.9		
Education	449	2.4	986	5.7		
Other	137	.7	191	1.1		
Public administration [1]	3,556	19.0	4,455	25.9	1.8	24.1
Industry not reported	175	.9	103	.6		
Total [2]	18,671	100.0	17,308	100.0	40.1	62.1

[1] This category includes only workers in public administration as such. Government employment as a whole accounts for over 50 percent of total employment if other Government-operated functions such as schools, hospitals, and commercial port are included.

[2] The decline in total employment from 1949 to 1960 was caused by a decrease in the number of alien contract workers present in Guam.

Source: U.S. census, 1960; E. L. Ullman and M. F. Dacey, "The Minimum Requirements Approach to the Urban Economic Base," vol. 6, "Papers and Proceedings of the Regional Science Association, 1960."

Apart from the construction industry, then, the private sector of Guam's economy is almost exclusively devoted to nonbasic businesses supported by the federally financed activities; mainly trade, business services, and personal services which, by and large, are represented in nearly the same proportions required for purely local service purposes in mainland communities of similar size.

The latter fact reflects the continuing convergence of consumption habits in Guam with those of the mainland. With a minimum wage law paralleling that of the United States, and with both Federal and local government pay scales averaging well above the minimum, large advances in real income and standards of living have occurred postwar. The people of Guam, especially the younger generation, now

have essentially the same kinds of economic expectations and aspirations as those typical of most mainland communities. The private sector has developed in response to the effective demands generated by the rise in personal income to date. With further advances in income, additional development of local service industries can be expected to result in a wider range of offerings of goods and services, possibly at lower prices, and no major action is necessary with respect to the local service sector.

Because of the small size and the trade and service orientation of Guam's economy, most of the goods consumed on the island are imported. To provide a rising standard of living for the rapidly growing population, it is evident that Guam's civilian community must earn an increasing supply of dollars from off-island sources with which to finance imports. New basic activities—those that increase the inflow of dollars by "export" of goods and services or reduce the outflow of dollars by replacing imported goods with local production—will be needed. Table 1 suggests that, for every six jobs created in basic industry in Guam, about four more jobs will be generated in local service industries. Therefore, economic development efforts must be directed largely to basic activities in order to take advantage of the multiplier effect they offer.

B. The Labor Force and Future Employment Requirements [5]

So great has been the impact of the military and construction expenditures during the postwar period that the local work force has had to be supplemented by temporary alien labor (the supply of which is regulated according to current demand) and by civil service workers hired elsewhere in the United States. Only in 1962 did serious signs of softness appear in the economy, and that situation was radically changed by Typhoon Karen. The tapering off of reconstruction activity in the last few months has been similarly offset by increased military activity. Although Guam's economy remains vigorous, there is a definite possibility of future labor surpluses. This could come about through an actual decline of military activity, a fast growing labor force, or both. No one can predict the military variable, but a rapid growth of the labor force is assured.

The population of Guam is estimated to have increased from 57,000 in 1960 to about 73,000 in 1965. Excluding alien contract workers, the population is conservatively projected from less than 70,000 in 1965 to 75,000 by 1970 and 81,000 by 1965; this allows for no growth of the military-connected population. Assuming also a gradual rise of labor force participation rates approximately to mainland age- and sex-specific levels by 1975, the number of permanent local residents in the labor force may be conservatively expected to increase by perhaps 2,200 in 1965–70 and more than 2,600 in 1970–75. Much of the increase currently is and will continue to be in the ranks of younger people newly participating in the labor force. Greater school and college attendance would delay somewhat the dates of entry to the labor market but would not significantly alter the outlook.

It is probable that some of the expected increment of the local labor force will be absorbed by additional replacement of off-islanders now holding jobs in Guam on a temporary or semipermanent basis.

[5] See app. I.

This source of employment is sufficiently important to be reserved for later consideration as a separate topic. Depending upon the success of local workers in developing the skills required to take over such jobs, however, a need would remain for somewhere between 2,500 and 4,000 new jobs within the next decade. Assuming that relatively few of these jobs will be generated by Federal and local government, and a basic employment ratio of 60 percent, the requirement would be met by the creation by 1975 of new export-increasing and/or import-replacing employment of 1,500 to 2,400 local workers in the private sector. It is to this requirement that the job development activities of the government and the private business sector must be directed.

The private sector, however, is largely a residual employer of labor, for there is a definite employment hierarchy—partly in terms of status and partly in terms of pay, security and other benefits. Local workers tend to regard Federal civil service employment as the most desirable, government of Guam as next best, and private employment as least attractive. Since Guam has been chronically short of labor, it is understandable that private firms, as residual employers, have experienced higher rates of turnover, absenteeism, lack of needed skills and other labor problems. The new basic industry required in the future will place Guam's private sector in a position it has not heretofore experienced: direct competition for both internal and external markets with industry in other areas having better locational advantages, greater natural resources and large supplies of labor skills, frequently at wages far lower than Guam's. To support Guam's wage structure in such competition will require heavy emphasis upon labor productivity, which in turn demands aggressive and effective programs in local education and vocational training.

C. Key Factors in the Development Potential

Guam's potential for developing basic industries in the private sector is influenced by a unique combination of opportunities and constraints, market access and market denial, institutional advantages and institutional disadvantages.

1. GEOGRAPHY [6]

Guam is 3,300 miles from Honolulu and over 5,000 miles from the U.S. mainland. It is much closer to a number of Western Pacific neighbors; those having present and future economic significance are the surrounding Trust Territory of the Pacific Islands, Japan, Taiwan, Hong Kong, the Philippines and Australia. It is a tropical island about 31 miles long and 4 to 9 miles wide, with a warm and humid but fairly pleasant climate and considerable natural beauty. Like other places in the Pacific region, Guam is subject to typhoons and tropical storms which somewhat increase the costs of building and create a hazard to commercial agriculture. There is a wet season and a dry season and the latter, can, on occasion, lengthen into drought. Nevertheless, a considerable variety of crops and forage plants can be grown, particularly in certain areas favored by topography and soil characteristics. Oceanic resources in the immediate vicinity of Guam are limited to the recreational and noncommercial fishing potential of

[6] See app. 2.

the beaches, reefs, bays and nearby offshore areas. Surface and ground water supplies are and will be adequate with development programs now underway. Commercially significant mineral resources are absent.

Guam is definitely handicapped by its great distance from the United States and its 1,500- to 2,000-mile distance from centers of economic activity in its own part of the world. The high transportation cost associated with distance from markets and sources of supply has a twofold significance: it favors local production to compete in local markets with imported goods having a low ratio of value to weight or bulk, and/or high perishability; and it requires that goods produced for export have a relatively high value-to-bulk ratio. Guam's modest endowment of natural resources limits the first case largely to agricultural production and bulk-gaining activities such as soft drink bottling and baking, the latter two being already well developed. In the second case, local resource limitations dictate the import of parts and raw materials for local manufacture and reexport.

In the area of service exports, Guam's locational and resource characteristics favor tourism as the best possibility for the next decade, almost to the exclusion of other services. Much has been made of Guam's "strategic location" as the westernmost extension of American soil, law, political stability, and customs; its possible role not only as a major military base but as a showcase of American democracy in the Pacific; and, economically, its potential as an American-style Hong Kong performing trade, distribution, financial, administrative, educational and other services for the Western Pacific area. These exciting if somewhat vague aspirations should be put aside for future reference but certainly not rejected, for they represent worthy goals that could well materialize one day. For the present, however, they are largely irrelevant to the many complex and difficult tasks required to meet more immediate employment needs and to establish more of the prerequisite facilities and services upon which their eventual attainment will depend.

2. EXTERNAL TRANSPORTATION AND COMMUNICATION [7]

Guam's heavy dependence upon external passenger and freight linkages with the United States and with other Pacific areas gives critical importance to the cost and adequacy of air passenger and ocean freight service, particularly in view of their implications for the competitive position and feasibility of future export industry development.

At present, commercial transpacific air service is available only to Honolulu and Manila, with three flights per week in each direction. This service is inadequate to handle the traffic load; passengers to and from Guam are frequently able to reserve space only several weeks ahead and even then run the risk of being bumped. It is reported that Pan American Airways plans to adjust to the reduction of its Manila landing rights to two flights per week by providing four flights a week each way between Guam and Honolulu, which should reduce the load factor from its present unconscionably high level. In addition, however, alternative service to other Pacific destinations is needed. One possibility is a direct north-south route between

[7] See app. 3 and sec. IIIC of Pt. 2.

Japan and Australia, using Guam as a stop. Another possibility is the initiation of shuttle service between Guam and Taiwan, a plan which has been under consideration by Taiwan's Civil Air Transport. A route to Taiwan would offer convenient connections with Hong Kong, Okinawa, and Tokyo and has much to recommend it. Whether the new connection be with Japan, Taiwan or Hong Kong, Guam's business promotion and tourist potential would be greatly advanced. The Federal Government should consider the facilitation and early establishment of such a new airline route as an urgent responsibility.

A second air service objective that deserves immediate attention is a reduction of passenger fares. The Civil Aeronautics Board has been pressing for a 15-percent reduction by major American carriers on North Pacific routes on the ground that the profit position on them is excessively high. Despite the high load factors on the Honolulu-Guam routes, fares are noticeably out of line with those on U.S. domestic and North Atlantic routes, at least to the extent of the CAB's 15 percent.

Whereas improvements in air carrier service and costs are somewhat constrained by problems of international negotiation and the interest of foreign carriers in maintaining a high rate structure, the opposite situation prevails in sea transportation. Ocean freight service to Guam is unfavorable because of a directional traffic imbalance and also because Guam is subject to domestic coastwise shipping regulations on the Guam-United States route which prohibit the use of lower-cost foreign carriers and allow no subsidies to domestic carriers. Traffic between Guam and foreign countries is carried by foreign ships at comparatively low rates; freight tariffs between Guam and the United States, however, are markedly higher than those prevailing between Western Pacific countries and the United States.

Guam's import traffic is far larger than its export traffic, and the bulk of the imports are from the United States (as indicated in table 2). The major current effect of the high Guam-United States freight tariff, therefore, is on consumer prices and real incomes in Guam. In the future, however, local price levels will affect Guam's ability to attract tourists; and the development of basic industry involving the export of goods to the United States will also be handicapped by high freight charges. The latter problem could be ameliorated partly by negotiations of special commodity rates to take advantage of the underutilized back-haul capacity.

TABLE 2.—*Imports, exports, and transshipments in revenue tons by country, fiscal year 1964*

Country	Imports	Exports	Country-to-country transshipment	Amount
United States	118,791	14,792	United States to trust territory	20,446
Japan	22,207	726	Philippines to trust territory	1,396
Trust territories	4,239	21,024		
Philippine Islands	5,064	6,897	Other	1,010
Australia	6,068	42		
Formosa	6,672	12		
Hong Kong	3,989	2		
New Zealand	1,596	2		
Other	9,764	2,125		
Total	178,440	45,622		22,792

Source: Commercial port of Guam, annual report to the Governor, fiscal year 1964.

But a more fundamental solution is needed. The usual proposal is to remove Guam from the coastwise regulations, as has been done with the Virgin Islands and Samoa. This is based on the expectation that the introduction of foreign competition and subsidized operation of domestic carriers would result not only in lower Guam-United States freight charges but possibly in the use of more efficient modern ships than those now operating between Guam and the United States under what is, in effect, an insufficiently regulated monopoly situation. Complicating factors are present, however. Scheduled service is important to Guam and it has been argued that, in view of the relatively small market and the traffic imbalance, foreign carriers might not be interested in the Guam-United States route. In this event, little change could be expected in freight rates. Also, Pacific Far East Lines handles military cargo to Guam for MSTS (at rates far below the commercial tariffs), and this freight can be carried only in domestic or MSTS ships. Nevertheless, there appears to be no practicable alternative to the exemption of Guam from the coastwise shipping laws, on the assumption that it might lead to additional carriers, subsidization of the U.S. ships, and lower tariffs.

Within Guam, the things needed locally to improve external transportation services are being done; a modern commercial air terminal is under way, and the development of a new commercial port along the lines recommended in the Tudor Engineering report is delayed only by negotiations with the Navy. The new port will be adjacent to the present Navy ammunition wharf. Since the Navy will not give a waiver allowing use of the land for the commercial port next to the ammunition wharf, the wharf must be moved; but budget provisions for the relocation have not been allowed. Acquisition from the Navy of the land required for the commercial port was also stalemated at last report over the issue of land value. Inasmuch as the commercial port project accounts for about one-fifth of the projected expenditures of the $45 million rehabilitation fund and is essential to certain other industrial projects, these delays are, to say the least, unfortunate.

As for external communications, Guam is well served by telephone and telegraph connections by underseas cable to the United States, Japan, the Philippines, and Australia. Mail and parcel post service represents one of the greatest bargains in the world, since Guam is in the eighth postal zone and the same rates to mainland points apply as in California. Occasionally, minor difficulties are caused by the delay of airmail shipments in Honolulu; more serious, however, is the slowness of first-class surface mail, together with an apparent lack of awareness of this situation by many people on the mainland. The result is that important mail may take as much as a month or more to reach Guam. This situation could be remedied by carrying all first-class letter mail to Guam by air.

Improving the speed and lowering the costs of transportation and communication between the mainland and Guam would help to ease other problems of development. The necessary powers of decision and action are in the hands of the Federal Government. Guam can only press forward its case for adequate service at reasonable prices at every opportunity until the issues are favorably decided.

3. THE MILITARY [7]

The dominant role of the military in Guam's development has had a number of facets. Most important is the direct employment of local residents and the direct and indirect employment of off-islanders whose consumption expenditures support secondary local service and trade activities in the private sector. Purchases by the military of goods and services from local vendors are another but less significant source of private sector business. Various other benefits to the community and economy are attributable to the military presence. Military on-the-job training, both formal and informal, contributes to the development of labor skills. Military and off-island civil service dependents have been a welcome source of skilled and semi-skilled labor, especially in schoolteaching. Generous assistance has always been provided by the armed forces in times of need or sudden emergency. Expensive basic facilities such as sea and airports, power, water, telephone, and even medical services, originally provided by the military and shared with the local community, have provided external economies in the further extension of these services by local government as it assumed responsibility for them in the civilian community.

These invaluable contributions provide grounds for confidence that the military will continue to assist Guam's development whenever it can do so without interference to its own missions. In this connection, it should be pointed out that Guam's economic development will yield benefits to the military also, by making certain goods and services increasingly available, thereby relieving the military of the need to provide them for itself (often at considerable cost). Specific areas of cooperation for the future are as follows.

a. Local hiring and training [8]

Whatever the future course of total military employment, efforts should be continued to increase the proportion of local-hire personnel at all job levels for which qualified applicants can be found or developed. Like private employers, the armed forces have been affected by the shortage of local labor and have had varying degrees of success with the workers available. As the local labor supply increases in quantity and skills, these problems will gradually disappear. The military can speed up the process not only by hiring qualified local workers but by actively helping them to qualify through intensified apprentice and other training programs as more workers become available. This is not to deny the value of past and present training programs nor to minimize the difficulties with which they have had to cope. It simply expresses the hope that the armed forces will increase their own programs to match and integrate them with the intensified training efforts recommended for the civilian community. Close liaison with appropriate government of Guam agencies will be needed.

b. Purchasing local goods and services [9]

It might be expected that the availability of both the military market and the civilian market would make possible a wider assortment of business activities by permitting functions that neither market by itself could support. This is not noticeably the case. The

[7] See app. f.
[8] See sec. IIA-3 and sec. IV of pt. 2.

business community complains that it cannot compete with goods brought in by MSTS (Military Sea Transportation Service) and sold for official purposes or in military stores at prices that reflect neither the cost of transportation nor various overhead costs that must be borne by civilian merchants. They also deplore the use of military base exchanges and commissaries by unauthorized civilians. The Guam Department of Agriculture complains that the military will not guarantee purchases of local farm products at prices acceptable to local farmers. Military supply and procurement personnel in turn point out that they are more than willing to purchase additional goods and services from local vendors and even try to seek out such opportunities. They grant that they are bound in some instances by procurement regulations which permit them to pay little, if any, more for locally purchased goods than the subsidized (essentially f.o.b. west coast) prices that are available to them. But they insist that there are opportunities for local purchase where these difficulties do not exist—mainly in business, personal and repair services and, in some cases, in agricultural products—and where the local supply side is unresponsive. Both sets of claims, unfortunately, are essentially accurate; it is a situation where differing interests are working at cross purposes. Using the test of potential contribution to the development of Guam's basic industry, however, certain conclusions can be reached.

Certainly the use of military stores by unauthorized persons, whether directly or indirectly through authorized personnel, should be stopped. As to local purchases by the military, it is suggested that purchasing officers be required to add a transportation-cost mark-up at least equivalent to the MSTS unit cost in determining the price that can be paid locally for each item, and to buy locally whenever the item is available at or below the cost-plus-transportation figure. In the important case of agricultural products, local output and quality uncertainties together with the long delivery time from off-island sources do create difficulties in assuring dependable supplies; but these can be minimized by contracting for quantities well within the capacity to deliver and seeing to it that they are delivered when needed, even if the local civilian market price at that time is higher than the contract price. This requires the presence of responsible, efficient, commercial-size farm operations.

But more can be done by the civilian community to exploit the military market potential, especially in the service area, the main need being for entrepreneurs who want to exploit it. Although some have on occasion aggressively pursued and obtained military business, local businessmen generally have shown little initiative in dealing with the military and must often be induced to offer desired items at required standards even when price is not a major issue. There is evidence that, apart from entrepreneurship, the unavailability of qualified labor has been a major handicap to local vendors. As the labor supply improves, it will be up to the private business community to work closely with military supply agencies to seek out and supply the best market possibilities. Both the chamber of commerce and the Guam Economic Development Authority (GEDA) should participate in this effort. Greater price competition in local stores, together with the development of additional recreational and tourist facilities, will also help to bring military

people off the bases to make larger expenditures in the civilian economy. The operative force, however, should be a pull rather than a push.

4. THE FAR EAST AND MICRONESIA

Guam's location with respect to a number of Western Pacific economic centers has major implications. A direct potential for Guam exists in the Japanese and Australian tourist markets; in addition, these and other areas such as Hong Kong, Taiwan, Singapore, and Thailand attract large and increasing numbers of tourists from the United States, to whom Guam might be made attractive as a stopover point. Moreover, these places supply tourist goods which could be sold in Guam to homeward bound travelers. Japan, Taiwan, Hong Kong, and perhaps Australia are also likely sources of investment, entrepreneurship, technical expertise and parts of raw materials for manufacturing in Guam. It is impossible to foresee any significant potential for them as markets for goods produced in Guam, however, and as mentioned earlier their possible significance as future markets for services provided by Guam cannot and need not be evaluated at this time.

The Trust Territory of the Pacific Islands, the western portion of which more or less centers around Guam, is less easy to appraise. It is in a state of underdevelopment with economic, social and transportation problems that make Guam's seem insignificant in comparison. At present, Guam functions as an air transportation node and as a transshipment and reexport point for goods destined to various islands of the trust territory. From the trust territory it receives a few agricultural products, some students to be educated in Guam schools, and a fair number of immigrant workers. There can scarcely be any question that Guam is the natural metropolitan center of the western trust territory, even though statements of trust territory officials suggest an intent to alter this situation. The main question concerning the future economic role of the trust territory with respect to Guam turns on the extent to which development of the trust territory can or will be made to occur.

As to the wisdom of coordinating the development policies of the trust territory and Guam there can be no doubt. Shortsighted attempts by one to gain advantage at the expense of the other should be prevented by the Department of the Interior to whatever extent its influence over each permits. Guam, for example, must not block agricultural competition from trust territory farmers by restricting imports of fruits, vegetables and animal products except in bona fide cases of temporary glut or plant disease control. If trust territory competition has the effect of lowering the average level of prices to Guam farmers and hence restricting the extent of agricultural industry in Guam, it is an outcome that should be accepted for the good of the trust territory farmers and Guam consumers. Comparative advantage works two ways, however, and by the same token it would be senseless for the trust territory to invest in air and sea ports which duplicate rather than supplement the functions of Guam's facilities. In tourist industry development particularly, the interests of the two are intertwined. Some of the most interesting places in the trust territory are accessible from Guam—Saipan and the northern Marianas to the north; Ulithi, Yap and Palau to the southwest; and Truk

and Ponape to the southeast. Guam is the logical gateway to these islands; their tourist business (if it develops) will benefit Guam; Guam's tourist and other traffic will benefit them. A common promotion program is called for, just as a common agricultural research, extension and market development program makes sense.

Such things are easier said than done, however; much depends on the future measures taken to develop the trust territory. One obvious handicap is presented by the regulation of entry through blanket security clearances. Since it is hardly conceivable that all of the trust territory islands are militarily sensitive, at least a partial lifting of security regulations should be possible for areas where they serve no constructive purpose. Guam can develop without regard to the trust territory, but the prospects of both will be improved if obvious areas for cooperation are exploited—by Federal fiat, if necessary.

5. THE U.S. MAINLAND [10]

The U.S. mainland—its tourists, its import markets, its entrepreneurs and investors, but particularly the Federal Government and its laws, policies and programs—will be the chief determinant of Guam's economic future. The vast private markets and enterprise capital of the United States can scarcely be tapped at all by Guam unless use is made of the special provisions in the U.S. law designed to encourage development of the territories, and of more generally applicable Federal sources of financial and technical assistance as well. If these institutional advantages are turned to effective use, Guam can continue to progress toward the economic goals that are contemplated for it.

Of most direct importance to private sector development are (1) section 27 of the Organic Act and headnote 3a of the Tariff Schedules of the United States, which provide for tariff and quota exemption on otherwise dutiable goods, the products or manufactures of territories in whose value dutiable foreign materials do not count for more than 50 percent; and (2) the tariff exemption granted tourists on dutiable goods up to $200 in value if purchased in territories, as against $100 if purchased in foreign countries. A second type of advantage is represented by the provisions of section 30 of the Organic Act whereby the Federal Government covers income taxes on income earned in Guam, and other internal revenue taxes collected in the United States on products or manufactures of Guam, into the Treasury of Guam. Finally, a number of the regular Federal financial and technical assistance programs to local communities and private business are available to Guam. The latter do not constitute special advantages relative to mainland communities, but their availability and proper exploitation will probably be more important to Guam than to most mainland areas.

There are, of course, negative factors also in Federal policies affecting Guam's development, one of which—the transportation problem—has been mentioned. Others, as will be pointed out later, are largely technical and administrative matters connected with Guam's small size, special problems, and remoteness from Federal decisionmakers; and the resultant difficulty of obtaining appropriate local and Federal action to fit Guam into Federal programs with maximum effectiveness.

[10] See app. 7 and secs. IA and III of pt. 2.

Beyond the positive functions of the mainland as market and source of assistance, it plays a passive role as the destination of outmigrants seeking education and better employment opportunities. The value of this safety-valve aspect can hardly be overestimated, and it should be an explicit part of the island's economic strategy, calling for continuing stress on the improved preparation of young people to take advantage of mainland opportunities.

6. LOCAL BUSINESS ENVIRONMENT

Doing business in Guam (as anywhere) presents problems and advantages that vary according to the nature of the activity. Summarized below are those basic aspects of the business environment that will be of more general concern to prospective investors or in utilizing the business talent already present.

a. Land, building and construction costs [11]

Purchase of private land in Guam is often a difficult and time-consuming process because of fractional ownership, uncertain boundaries, clouded titles, and the special importance attached to land ownership by local citizens. More than half the land in Guam is in public ownership, both Federal and territorial, but even here is a degree of confusion about the amount, location and status of land in each jurisdiction. Most of the government of Guam land originally acquired from the Department of the Interior is subject to reversionary limitations which restrict its use or disposition by the government of Guam and require specific release by Interior for other uses; these releases are reported by the Guam Department of Land Management to be subject to delays in processing and to require reprocessing when a change is made in the proposed use.

Construction costs in Guam are estimated to be about 10 to 50 percent higher than in the mainland, depending upon size of project, materials used, type of building, etc., and commercial projects are often completed over a significantly larger time span than is typical of the mainland.

Land acquisition and building, therefore, may in some cases present unusual problems. It will be useful for the government of Guam to settle on one or two locations for development as industrial parks, provide rough site preparation, main roads and utility connections, and perhaps construct one or two small buildings on speculation in order to give quick service to prospective investors without special site or plant requirements.

Sites necessary for private business and other economic development purposes will frequently be available, however, only on military land, on government of Guam land subject to reversionary limitations, or on private land obtained through "swapping" an equivalent amount of government of Guam or military land for it. It will be increasingly necessary for the military to examine carefully its need for various tracts of land and be prepared to make surplus lands readily available for economic development purposes at reasonable prices. The Department of the Interior, similarly, should seek to satisfy the legitimate needs of the government of Guam to use its land for economic development purposes without submitting each proposed transaction for approval in a Federal bureau more than 8,000 miles away—partic-

[11] See appx. 2 and 4.

ularly when negotiations involve third parties on the scene in Guam. Lack of an adequate general land survey should not be permitted to stand in the way of a solution because it may be many years before a survey can be completed and all land accurately registered. Modification of the reversionary limitation should be made to allow the government of Guam greater flexibility in using and disposing of land to which it applies, even if only for limited areas identified as having probably direct or indirect significance for economic development uses.

b. Utilities and other public services [12]

Power and water services are quite adequate, and presently projected developed programs will take care of future needs. Telephone service is lagging behind the demands made on it and expansion and modernization of the system will be required. Rates for these three services are somewhat high by mainland standards but certainly not to the point of affecting the feasibility of most types of business enterprise. Police and fire protection are adequate. There is frequent criticism of delays, losses, damage and cost of service at the Commercial Port (as at certain other U.S. ports), but again these defects appear to strike businessmen as annoyances rather than serious hazards, and there is every likelihood that lasting improvements can be made.

c. Business services [13]

The availability of supplies, equipment and spare parts in Guam is conditioned by the distance factor which, in addition to its direct effect on local prices via transportation costs, results in discontinuities in the flow of goods to the islands and a long lead time in placing orders. Businesses in Guam must maintain somewhat larger inventories of supplies and essential equipment than is usually necessary or run the risk of occasional nonavailability of items when they are needed. Repair and maintenance services for equipment and facilities are usually available, especially for heavier equipment. Legal services are somewhat better represented than accounting services.

Many of these characteristics follow naturally from the small size of the island economy which, in these respects, is similar to a mainland community of comparable size. One exception is the fact that Guam businesses cannot readily avail themselves of specialized services, suppliers and subcontractors such as those more easily available in small mainland cities closer to metropolitan areas. This situation does not appear to present a serious obstacle to Guam's economic development, for the essential services are available and will be increasingly so, commensurate with the growth of the local market.

d. Finance and banking services [14]

Local sources of finance are far more important to local businessmen than to potential outside investors, most of whom have ample cash or credit. Although there has been increased banking competition and a considerable easing of local credit conditions in recent years, bank loan policies and terms are still more stringent than in large mainland communities. The presence of the Small Business Administration and the Federal Housing Administration programs has been vitally important in financing local business and house building during the reconstruction period. Federal programs which help to

[12] See apps. 4 and 7.
[13] See App. 4.
[14] Ibid.

ease the flow of credit to local businessmen and home buyers will continue to be essential to the development of Guam's local service sector—at least until further economic growth gives greater assurance of economic stability to lenders and leads to still greater competition in the financial field. By providing financial resources to support maximum development of the local service businesses consistent with the size of the economic base, the attraction of new basic industries will be assisted.

e. Housing, education, and amenities [15]

Businesses contemplating location in a particular area are frequently sensitive to the living conditions available to key personnel and their families who may be sent there. Guam has a housing shortage that is most acute in the low-cost housing area but it extends to moderately priced dwellings as well. Although a substantial backlog of demand remains, particularly for apartments and rental units, there is a growing supply of houses in the $13,000- to $18,000-price range. Standards and expectations pertaining to public school education may be less easy to satisfy, but continued and increased emphasis on improvement of the school system will eventually overcome this problem. And to those who do not insist upon metropolitan conditions, Guam can offer a considerable range of consumer goods and services; natural beauty and recreational advantages; and a relaxed, genuinely friendly social atmosphere. Many of the improvements designed to make Guam more interesting to tourists will also help to increase its attractiveness to off-island businessmen.

f. Development role of the local business community

With further growth of Guam's economic base, further diversification and specialization of ancillary services will be assured. It should be pointed out, however, that the local service orientation and relatively small scale of business in Guam mean that opportunities for local entrepreneurs to expand ongoing activities into export industries are very limited. By and large, it may be expected that the technical and market expertise, entrepreneurship, and finances required for the establishment of goods-exporting industries will come mainly from off-island sources. Yet the business community is sophisticated, public spirited and vitally interested in Guam's further growth, and its talents should be fully utilized. This may best be done by mobilizing local business, both in organized groups and as individuals, to work toward specific local development objectives. Business cooperation with government by participation in boards, commissions and advisory functions is already well established. Too often, however, the goals are too broad or diffuse, or action does not proceed from good advice. If highly specific objectives are established, to which the Government is committed in advance, and if compensation and expenses are paid by the Government as an incentive and as a token of good faith, the ideas and enterprise of local businessmen might yield some surprising results.

[15] See apps. 4, 5, and 7.

g. Local Government regulations and inducements [16]

Guam has provided several major institutional advantages to prospective investors. By virtue of its free-port status outside the U.S. customs area, it allows local businessmen to avail themselves of low-cost foreign materials and equipment; and this, in conjunction with the U.S. tariff preference, creates the possibility of exporting manufactured goods to the United States.

The Guam Economic Development Authority, created in 1965 with extremely broad functions and powers to promote economic development by various means, provides for tax abatements to bona fide resident persons, firms or corporations designated as tax exempt by the Authority. Exemptions from all major local taxes may be issued (with the exception of the two percent gross receipts tax) at the rate of 100 percent for periods up to 10 years or at the optional rate of 50 percent for double the authorized period. The most important taxes affected are, of course, income taxes on corporate income and dividends (abatements on dividends being granted only for 5 years). Since the Guam income tax is an identical substitute for Federal income tax, the advantages are obvious. On the other hand, it should be noted that income tax abatements are significant only to enterprises that are earning profits in the first place—and then in proportion to the size of the profits. Thus tax abatement would appear most useful as a clincher, rather than as a means of subsidizing infant industries.

Other powers of the Authority include the sale of revenue bonds; the establishment and operation of its own industries; development of facilities for lease or sale to industry; loans and other financial or technical assistance to Guam businesses; direct investment in enterprises; conduct of research; and guarantees of obligations of other corporations. These powers, allowing for considerable experimentation by the the Authority, are adequate to cover almost any conceivable possibility. They are in fact so sweeping that a great deal of good judgment will be necessary in exercising them. One major restraint will be operative, however the initial availability of capital funds for the Authority, since this depends in the final analysis upon the cash reserves and/or borrowing power of the government of Guam.

It appears that the early operations of the Authority, both by logic and necessity, will be largely restricted to the tax abatement provisions. In view of the fact that Guam as a whole is a capital-short area, the attraction of outside investment funds via tax abatement is the obvious policy to emphasize over the next few years. Utilization of the other powers of the Authority should proceed slowly and cautiously until a background of experience has been obtained. In any case, projects involving heavy direct financing by the Authority should be avoided in favor of partial or leverage participation in order to conserve capital resources.

[16] See app. 6.

D. Recommended Lines of Development

The factors outlined in the preceding pages suggest four main areas of development potential for basic industries and employment:

(1) Export of high-tariff goods to the United States, based on local manufacture or assembly of imported materials;

(2) Substitution of local production for imported goods, mainly in the field of agriculture;

(3) Tourism based on the United States, Japanese, Australian, and local military markets; and

(4) Other service exports, mainly based on further supplying of the local military market.

In addition, there is the employment potential offered by further replacement of nonpermanent off-island workers with local residents, full utilization of which requires—

(5) Accelerated progress in the expansion and improvement of public school education and vocational training programs.

None of these development areas represent new ideas to interested persons in Guam; all of them already figure prominently in the community's discussions of development needs and in actual government programs (together with others that appear premature at present).[17] Until recently, as a matter of fact, heavy promotion of export industries and tourism would have been premature because of the demands made by reconstruction of typhoon damage to basic facilities and the consequent shortage of labor. Even now, however, when it is appropriate for development objectives to head the community's agenda, concentration on careful, thorough execution of programs in a few areas is much to be preferred over a wider ranging approach. Getting the essential things done well is the major part of the job.

[17] This is readily apparent from the ideas and suggestions concerning Guam's economic development presented by local residents to the Federal-Territorial Commission in Agana in March 1963. Specific points from this testimony are summarized in app. 9.

II. DEVELOPMENT POSSIBILITIES IN THE PRIVATE SECTOR [19].

A. Exports

Opportunities for the establishment of industries producing export goods are clearly available to Guam. Virtually all of them depend upon U.S. preferential treatment. It is perhaps conceivable that a few ventures will turn up as feasible on a purely commercial basis, but the obvious potential to be explored and developed is that offered by Guam's institutional advantages in the U.S. market.

The tariff exemption provisions of headnote 3a offer the largest number of opportunities, all based on assembly or processing and re-export of low-cost foreign materials, parts or subassemblies. Prospects of profitable operation appear virtually certain in at least three such areas: tuna canning, textiles and apparel, and watches and other horological devices. Several other industries appear to have good chances for feasible operation, including fishing tackle, tennis shoes, and photographic and optical products; and a number of other products that survived preliminary screening but could not be sufficiently investigated in the course of the study may offer additional opportunities.

Apart from headnote 3a enterprises is the possibility of a petroleum refinery, which requires certain military purchase commitments to insure its feasibility, and the possibility of liquor and tobacco manufacturing based on the return of U.S. excise taxes on the products to the government of Guam.

Sustained promotional effort and continuity of purpose over a period of years will be required to learn and exploit the full scope of the potential. General conclusions and recommendations as to the appropriate nature of this effort and some of the problems to be overcome or taken into account are outlined below.

1. U.S. PREFERENCE AND FEDERAL PROCEDURES

Operation of industries under headnote 3a is subject to the risks of (1) changes in the tariffs on the basis of which individual enterprises are established; (2) imposition of quotas in order to forestall adverse reactions on behalf of mainland industries; and (3) changes in the content or coverage of headnote 3a itself. Such risks are more or less inherent and will have been knowingly accepted by any business that is established to take advantage of the tariff exemption. The community should also be aware, however, that the same factors could have a selective effect on the types of enterprise attracted, which might tend to be characterized by relatively small fixed investment and a strong concern with fast payout. They may also be unusually sensitive to wage rates since they must weigh the tariff exemption advantage against the differential of labor costs in Guam over labor

[19] Detailed discussion may be found in pt. 2.

61-092—66——4

costs in the foreign areas with which they are in effect competing. This type of industry should not, by its very nature, be expected to provide high and rising incomes. It will, however, make extensive use of the growing number of women who will be intermittently or permanently participating in the labor force and will, in any case, play a valuable part in creating the conditions for the long-term development of the private sector.

Given the objective of encouraging establishment of tariff-exempt industries, it must be stated that changes are desirable in the policies and procedures of the U.S. Customs Bureau in interpreting and applying the provisions of headnote 3a. The Bureau will apparently rule, if requested to do so by a letter with sufficient descriptive information, whether an item being considered for manufacture under headnote 3a will qualify as a "product or manufacture" of the territory. Various instances of long delays in this process have been reported, however, especially for prospective investors who are inexperienced in its legal and bureaucratic intricacies. There is, moreover, no objective standard or rule of thumb by which the investor may make a preliminary determination for himself before requesting a ruling from Customs; neither, so far as we can determine, are any objective or uniform standards applied in the deliberations of the Bureau itself. The 50-percent rule, in contrast, is reasonably clear, but no determination can be made by the Customs Bureau until the merchandise has actually been appraised at the port of entry in the United States. These conditions can waste the time and money of territorial government industrial promotion agencies as well as that of would-be investors. They could be improved by the provision of adequate administrative standards that would speed up the decision process and clarify it to interested parties.

2. LOCAL GOVERNMENT INCENTIVES

Some of the businesses contacted, particularly American firms, expressed great interest in the income tax rebate possibilities and other government of Guam incentives. One U.S. firm queried whether Federal excise taxes on its product could be avoided if it were assembled in Guam. Since the Organic Act provides for payment of U.S. excise taxes collected on products of Guam into the treasury of Guam, it will be useful for the government of Guam to consider offering a rebate of such funds in whole or in part as an additional incentive to companies affected by excise taxes.

Since tax rebates are and should be limited in duration, their use could conceivably create the risk of companies operating in Guam for 5 or 10 years while the incentive is in effect, then liquidating at the end of that time. It is unlikely that this kind of risk can be anticipated and measured against expected gains to the economy in individual cases. The power of such inducements in attracting industry, however, warrants acceptance of the hazard until experience demonstrates whether or not policy modifications are in order.

3. OTHER SENSITIVE FACTORS

Locally available credit would not appear to represent much of an attraction to outside investors. Of those in the goods-exporting industry who were interviewed, few showed interest in such credit,

probably because most of their operations were neither small nor poorly financed.

There are some indications, however, of sensitivity to housing conditions and public schools, to ocean freight rates, and to the availability of factory buildings or space in an industrial park. This is hardly surprising. What was perhaps less predictable was the initial reaction of several U.S. businessmen to the physical appearance of the air terminal and to the area between the naval air station and Agana-Tamuning. Only after visitors see other parts of the island do they change the generally unfavorable first impression received from the disorderly land use, dilapidated buildings and junk piles that are too frequently evident in the central area.

4. PROMOTION AND LIAISON WITH POTENTIAL INVESTORS

Contacts with businessmen in the course of the study left no doubt that intensive research and promotion will be necessary. A few firms—mainly those which have operated in the Virgin Islands or those which have been cultivated by the Industrial Development Section of the Guam Department of Commerce—are acquainted with the problems and procedures of establishing operations under headnote 3a. The vast majority of U.S. and foreign companies, however, have absolutely no knowledge of the nature of the opportunity and what it might mean to them. Even when it is explained, some have difficulty in understanding it or in considering it carefully in terms of their own businesses. Others seem to feel vaguely that, in view of the managerial and technical difficulties of setting up a separate operation in a remote place like Guam, the game may not be worth the candle. The time and money costs of an inspection visit to Guam also discourage some who may have shown an initial interest from taking further action.

Some of these obstacles are simply inherent in the situation; we feel, however, that steps could be taken to improve the quantity and quality of promotional dealings with potential export firms. The first suggestion involves promotional methods. A diffuse approach based on advertising and broad public relations-oriented activities will be less effective, in our opinion, than one based also on intensive research and promotion of a few of the more promising industries at a time. Once the promoting body has acquired sufficient economic and technical knowledge of a given manufactured product to persuade itself that the item is feasible, it can deal much more persuasively with target firms, and in highly specific terms that will be more meaningful to them. The process of gathering information, moreover, will produce soft-sell contacts that may interest parties who were not approached for direct promotional purposes. It will also help to eliminate wasted efforts in pursuit of objectives that are not practicable, both for the government of Guam and for prospective investors.

A second suggestion relates to the need for smoothing the way for interested businessmen by providing needed information about conditions in Guam and helping them to cope with the bureaucratic procedures involved in obtaining necessary rulings from the Customs Bureau, in obtaining land or factory space in Guam, and in negotiating with the Guam Economic Development Authority for local incen-

tives or subsidies. A competent and responsible representative is needed to inform and lead prospective investors through these rather complex and time-consuming steps with a minimum of confusion and delay.

Both of the foregoing considerations lead to the conclusion that a promotion and liaison office in the mainland United States would be highly desirable. It should have a small, energetic, professionally qualified staff with authority to make reasonable informal commitments on behalf of the government of Guam and the Economic Development Authority. There is, of course, no guarantee that such an operation would be successful—but if 3 or 4 years' effort did not yield results commensurate with the cost, it could be eliminated. Continuity in the investigation and cultivation of potential new industries, such as an office of this kind could provide, is essential. No single survey of industrial possibilities of the kind undertaken in the present study can possibly provide answers sufficiently definitive and detailed, nor can it telescope into a short time the laborious process of discovering successful variations on a marginal theme that can result from continual research and contacts in any given trade. Adequate travel funds and salaries would be essential; the cost, given positive results, would be repaid many times over; negative results from such an effort would also be worth the cost, because they would give a firm basis for fundamental decisions concerning economic prospects and appropriate government policies.

5. SELECTED EXPORT OPPORTUNITIES

The results of the industry investigations are more suggestive than definitive. Certainly they do not warrant an attempt at a forecast or timetable of industrial development by specific type of enterprise. The industries listed below are the most promising survivors from an extensive preliminary list. In some cases it was possible to assemble fairly complete pro forma projections; in others, where sufficiently detailed or reliable data were unobtainable, qualitative estimates of feasibility were formed on the basis of discussions with businessmen and others with special knowledge of the product.

a. Watches and other horological devices (high probability)

Watch assembly is obviously feasible inasmuch as a plant is already in operation. The U.S. tariff is very high, shipping costs are low, and workers can be quickly initiated into the the routinized assembly procedures. Assembly of other devices such as timers and time switches would also be practicable. The only obstacle to successful operation is H.R. 8436, now awaiting Senate action, which would limit the tariff exemption on such items to the Virgin Islands. Several hundred people might ultimately be employed if the industry is allowed to develop.

b. Tuna canning (high probability)

This highly promising operation would employ perhaps 350 persons, 70 percent of whom would be unskilled. Investment is estimated at about $1.5 million, excluding docks and long-line fishing vessels. The latter (which would use Korean, Okinawan, or Taiwanese crews) might be obtained under contract from foreign owners, purchased, or both. Permission would be needed for the alien crews to come ashore

when in port; the only major hazard is the possibility of closure of Apra Harbor by the Navy for security reasons. Operations could not begin until the new Commercial Port is ready.

c. Textiles (high probability)

Knitted fabrics and apparel using imported wool, synthetic or blended yarn appear definitely feasible. There is a possibility of free training of workers in Japan under the auspices of the International Wool Secretariat. A plant turning out 10,000 pounds of fabric per week would employ 15 persons and cost about $280,000. Larger plants are possible. Ultimate size of the industry cannot be estimated. There may also be possibilities of garment manufacture using woven wool, cotton and synthetic fabrics imported from the Far East. Manufacture of cotton textiles from imported cotton does not appear promising.

d. Fishing tackle (moderate probability)

Assembly of rods and reels entirely from imported parts would not meet the 50-percent rule, but it would probably be feasible to manufacture some of the parts in Guam also, thus keeping the cost of foreign parts within the allowed range. Probably essential to the feasibility of the operation is a drawback (or its equivalent) of the U.S. excise tax. About 30 people would be required to staff a fishing reel plant with an annual volume of $1.5 million.

e. Tennis shoes (moderate probability)

Tennis shoes could be manufactured on Guam using imported canvas uppers and sole material. The soles would be molded on Guam and the finished shoe assembled there. A plant employing 95 people would involve an investment of about $500,000.

f. Photographic and optical products (moderate probability)

Most photographic and optical products would not satisfy the 50-percent rule. There was some indication that low-grade cameras might qualify, but the duty on such items is not always high enough to offset Guam's labor and transportation cost disadvantages. Motion-picture projectors and other viewing and editing equipment may be feasible. Despite the inconsistent evidence available, the large variety of products in this area might well contain one or more feasible items.

g. Products subject to U.S. excise taxes

In addition to the fishing-tackle case already noted, a number of other products are subject to substantial U.S. excise taxes. If the excise tax collected on such products manufactured in Guam and exported to the United States were returned to the government of Guam in accordance with the apparent intent of the Organic Act, all or part of such funds could in turn be used to subsidize the Guam manufacturer. Distilled spirits, taxed in the United States at $10.50 per proof gallon, would appear to be the leading possibility, although beer, at $9 per barrel, might also be of interest. Cigars, taxed at $2.50 to $20 per thousand, are another candidate.

h. Products for further study

For several other high-tariff products that were considered to merit detailed evaluation, adequate information was not obtained. These

include cigarette lighters, handbags and flatgoods, electric irons, toys, padlocks, and cabinet locks, pocket knives, jewelry, and barrettes.

i. Petroleum refining

The local market, civilian and military combined, probably would not support a petroleum refinery. If additional military demand in the Western Pacific region could be supplied from a Guam refinery, such an operation would become feasible—provided a deviation could be obtained from the military's usual practice of short-term procurement. It is assumed that full use of Guam Economic Development Authority tax rebates would be necessary. A plant with capacity of about 20,000 barrels per day might require 25 to 50 people, excluding marketing personnel. It would appear that savings might be realized in transporting crude oil from Middle East sources rather than refined products from either the Middle East or the United States. This, however, can be determined only by the Department of Defense in the context of its entire logistics picture. Products from a Guam refinery would also fit into "buy American" policies.

B. Import Replacement

Local production to substitute for goods now being imported does not have the advantage of preferential treatment which is available to certain export possibilities. Limited resources and market size also constrain the number and size of the opportunities for import replacement. High transportation costs to Guam favor local producers in competition with mass-produced stateside items, but this advantage does not apply in the military portion of the local market, as previously noted. Efforts to encourage import-replacing enterprises should be guided by the principle that costly subsidization or protection of local producers is a luxury that Guam cannot afford.

1. COMMERCIAL AGRICULTURE

Modern agriculture is a highly capital-intensive activity that will absorb large amounts of money in the development of a relatively small employment potential. Such capital should be supplied largely by private entrepreneurs. Local government efforts to stimulate commercial farming in Guam will be most effective if they are addressed to some of the other factors that handicap agricultural development:

(*a*) Lack of highly qualified and experienced farm entrepreneurs and managers;

(*b*) Difficulty in obtaining suitable land by purchase and continuing complications in obtaining long-term leases from the government;

(*c*) Inadequately developed marketing organization and facilities; and

(*d*) Difficulty in obtaining local labor for farmwork.

The government of Guam has tried hard to attack each of these problems directly. In the attempt to develop farming and management skills, it has offered vocational and college training in agriculture and has extended considerable financial assistance, extension services and direct operation services and supplies to local farmers. To assist market development, it has provided grading and sorting services,

supported a farmers' market and, more recently, a marketing cooperative; and it plans to establish a broiler processing plant and, eventually, a slaughterhouse. These and other activities have met with very modest success relative to the effort expended.

Nevertheless, local markets and land and climatic resources offer a reasonable chance of success to several types or combinations of commercial farm operation. This can best be brought about, it is submitted, by placing less stress upon utilizing the limited local entrepreneurial and financial resources available for farming and more stress upon bringing in skilled farm entrepreneurs who are capable of organizing and operating highly efficient modern farm enterprises. Cutting through the entrepreneurial-managerial problem in this way will permit a degree of integration and a scale of operation that will help to minimize some of the other difficulties. This type of agriculture would not supplant local farmers because it would develop markets not now served; indeed, it would have considerable demonstration and training value and would itself provide improved markets and sources of supply for small and part-time producers.

Use of off-island entrepreneurship would relieve the government of Guam of the need to perform farm entrepreneurial functions itself, and thereby allow it to avoid increasing involvement in business activities for which private management is better suited. Facilitating land availability at reasonable prices and attracting qualified off-island operators would be the main tasks required under such an agricultural development policy, and it is upon these that the government might appropriately concentrate its efforts.

A related suggestion, also directed toward making maximum use of off-island technical resources, concerns agricultural research, experimentation, extension, soil conservation and market improvement activities. If the U.S. Department of Agriculture participated in such functions in Guam (as it does elsewhere), the government of Guam could largely remove itself from this field where it is at a considerable disadvantage. Duplication of effort could be eliminated and a more efficient scale of operation would be possible if one organization served the needs of both Guam and the trust territory—and the U.S. Department of Agriculture should be that organization. It is recommended that steps be taken by the government of Guam and the Department of the Interior to secure its services for both areas on this combined basis.

There are several main forms that commercial agriculture of the kind described above might take: intensive truck crop production; feed grain/livestock farming (swine and cattle); egg production; and broiler production. Animal products offer the best potential, and horizontally integrated enterprises combining two or more activities are considered likely to be more viable. The feasibility of livestock and poultry enterprises will also be affected by the feasibility and availability of related processing facilities. Vertical integration of growing and processing in some cases is also considered to have a better chance of success. Suggested combinations are discussed below.

a. Broiler growing and processing

Integration of growing and processing is required in order to take full advantage of economies of scale and integration and because the

market will support only one processing plant, which needs an assured supply of chickens at favorable prices. A high degree of managerial skill is required. A minimum size integrated operation might have 25 employees—3 in growing and 22 in processing—if operated at less than capacity to serve only the present civilian market of about 1.8 million pounds (dressed weight) per year. Total investment, including working capital, would be about $260,000. At this volume, the enterprise would do little more than break even. Expansion of sales could be expected, however. At 100 percent of capacity, the after-tax returns might be 10 to 15 percent. Profitability is extremely sensitive to feed cost.

b. Egg production

This industry is already well established, but sales prices are relatively high and it is considered that more efficient operation together with lowered feed costs would permit lower prices and expanded sales, especially to the military. Egg production could be a sideline in a larger, diversified farm operation.

c. Feed mill

A minimum size plant geared only to the present island market for imported mixed poultry feed would employ a total of 11 persons and require an investment of about $183,000 (including working capital). Output could be doubled by an additional $30,000 investment and one or two additional employees; this would reduce costs by about $10 per ton. At the minimum scale of operation, using imported bulk ingredients from lowest cost sources and selling the output at slightly less than U.S. f.o.b. prices for mixed feeds plus freight to Guam, the mill might realize a 20-percent return on investment. At larger outputs, the mill could sell feed at a substantial saving over imported feeds, thereby improving the feasibility of feed-using enterprises. Using locally produced grain will permit still further cost and price reductions. When this point is reached, the feed mill will be the foundation of an entire industry which (with the exception of egg production) does not now exist in Guam on a commercial scale.

d. Pork and beef

Swine and cattle are now raised only on a semicommercial basis; large volumes of meat are imported. A modern slaughterhouse and packing plant is essential to the development of the industry. It could not be feasible, however, on the basis of current livestock production practices because of unreliability of supply and quality. Commercial cattle growing and feeding operations are necessary using advanced husbandry and range management practices integrated with feed grain (probably milo) production and feed lot finishing. With this assured basic supply, the finishing and packing enterprise can also provide a cash market for unfinished cattle produced by small or semicommercial operators. This same feed grain production, together with cooked military garbage and possibly some use of tuna cannery offal, will support a profitable hog-feeding enterprise. Even the feed mill might profitably be included in a large-scale integrated operation of this kind.

2. SUBSISTENCE AND PART-TIME FARMING

Backyard gardening and part-time farming on small plots appear to make sizable contributions to the real incomes of many families in Guam, but the actual dimensions of such activities are unknown. Much of the produce is consumed directly in the producing household or by neighbors; some if it finds its way into small village grocery stores and into the Farmers' Market in Agana; some of it is sold at roadsides. As a general rule, it will be desirable to preserve and encourage subsistence gardening by making adequate allowance for it in land use and village development planning and by seeing that well adapted and high quality seeds and fertilizers are kept available. Technical and operational assistance involving substantial expense to the government should be avoided.

3. MANUFACTURING

Local production of industrial goods to substitute for imports from the mainland does not appear to have more than marginal significance in terms of development potential. Local assembly of cans to supply a tuna cannery will be feasible, and it may be possible to can small quantities of other items such as fruits and vegetables (or reconstituted beer, should it find market acceptance) for the local market. Local manufacture of brick and tile might be expanded somewhat. Furniture assembly for the local market has been under consideration by a major company. A small plastics plant, producing parts for certain headnote 3a industries and supplying simple containers and other more or less standardized but bulky items to the local market, may also be feasible. The Guam Economic Development Authority and other local instrumentalities for economic development should be watchful for such opportunities, but no conclusions as to the feasibility of particular enterprises can be reported here.

C. Tourism

Opinion in Guam (and in tourist industry circles as well) is considerably varied as to the island's tourist potential. Our conclusion is that tourism presents probably the best long-term development opportunity available to the island. This should be immediately qualified by the proviso that certain things must be done, without which the possibilities cannot even be tested. But a number of important basic ingredients are present—an abundance of natural beauty and scenic attractions; a series of colorful villages in the southern part of the island that immediately charm most visitors; seaside areas excellent for water sports, shelling and exploration of reef marine life; a fascinating history and an interesting cultural heritage replete with highly promotable legends and superstitions; and proximity to a number of attractive and exotic islands of the trust territory of which Guam is the natural transportation center and gateway.

These basic characteristics are not likely to make Guam a primary tourist destination in its own right. But they will make it possible for Guam to attract a substantial volume of short-term and stopover traffic from the rapidly growing numbers of transpacific travelers.

Guam is, of course, better known at present than it has been since World War II as a result of the B–52 raids on Vietnam. It may become necessary to base some of Guam's future tourist advertising upon the results of market research to determine how this military notoriety can best be countered or exploited (as the case may be). Meanwhile, however, the development of tourism should be pressed forward along the lines outlined below.

1. FIRST STAGE (HIGHEST PRIORITY)

a. Hotel

A first-class resort hotel of at least 100 rooms should be built as soon as possible, and there is general agreement that the best site is in the Tumon Bay area where land has already been assembled for it. The cost would be on the order of $1 to $1.5 million, and it should be borne entirely or largely by private investors with the government of Guam's role limited to necessary guarantees or leverage participation. However, if private investors cannot be found within 6 months to a year (at most), Government participation should be increased to whatever point necessary to assure an immediate start. Operation of the hotel should be entrusted to an experienced, first-class chain operator.

b. Airline service

As soon as possible (preferably by the time of completion of the hotel), increased accessibility of the island to tourists must be secured. The main source of tourists to the Pacific area is the United States, but Guam's current air connections do not allow a convenient stopover there for many of those touring Western Pacific countries. A direct connection with Japan would be highly desirable because Japan is not only a major destination for U.S. travelers but a major source of tourists itself. But any link that would permit transpacific travelers to make a loop trip either going or returning through Guam would be satisfactory, and some such service is absolutely essential. This could be accomplished by shuttle service direct to Taipei or Hong Kong as an alternative or as a supplement to the Tokyo connection. Joint efforts by the Department of State, the government of Guam, and the Civil Aeronautics Board will presumably be required. Adequate service and reasonable fares on the present Honolulu-Manila route are also extremely important.

c. Increase of duty-free tourist exemption

It is recommended that Congress reconsider the recently established $200 (retail) limit on tourist exemptions on dutiable foreign goods purchased in the territories. Given the airline service and hotel recommended above, Guam might well attract a considerable number of U.S. homeward-bound tourists if a $400 or $500 exemption were allowed. With the resulting $300 to $400 "edge" over foreign areas, Guam might become a shoppers' mart where goods from all parts of the Orient could be sold to returning U.S. tourists at one convenient location at prices similar to those available in foreign countries. The effect on the U.S. balance of payments would probably be negligible since the increased expenditures in foreign goods would be offset by decreased expenditures on foreign hotels, restaurants, entertainment and transportation services. Only the foreign wholesale cost of the

goods sold in Guam, moreover, would represent a leakage of U.S. dollars. Permitting shipment of exempt tourist purchases in the territories by parcel post rather than requiring that they be carried by the tourist would be a convenient and logical adjunct to the exemption increase.

d. Implement National Park Service recommendations

Findings and recommendations of the National Park Service study of June 1965 are heartily endorsed in their entirety. The Park Service study team recommended the establishment of a War in the Pacific National Historical Park and a Philippine Sea National Seashore as units of a territorial park system which would also include park development of Tumon Bay (including Two Lovers' Point), the Plaza de Espana, Talofofo Falls and several other areas of special scenic and historical interest. Immediate steps should be taken to determine the costs and how they shall be distributed, to accomplish with all possible speed the necessary land transfers, and to set up a timetable of development. The Park Service recommendations are so well conceived and fit so well into Guam's tourist development potential that they should be treated as urgent requirements.

2. SECOND STAGE

During the next 2 or 3 years, a beautification and cleanup campaign is in order. Within that time it should be possible to eliminate most of the island eyesores without much difficulty. Serious efforts will be needed to improve disorderly land use conditions in the Agana-Tamuning area and to establish an acceptable community plan that will eventuate in a more attractice, modern and cohesive shopping area to serve tourists. Strict enforcement of zoning regulations and the building code will be necessary. An intensive tourist promotion campaign should be prepared and implemented when the first stage requirements near completion. In later phases, additional hotel space can be provided, perhaps in the southern villages. If business conditions warrant, additional attractions (such as a tropical garden or an aquarium exhibiting Western Pacific marine life) might be attempted. The list of possibilities at this later stage of development is extensive, and the actions to be taken will depend mainly on the size and nature of the tourist response to the first stage actions.

D. Other Services

As noted earlier, Guam might well have possibilities as an educational center. A first-rate college with an international staff might draw students from other Western Pacific countries as well as the trust territory. Other educational needs in Guam are so great, however, that this type of development must be assigned a very low probability of success at present and hence a low priority. The same is true of Guam as an administrative or trading center: the possibility is too remote to warrant immediate action.

Services to the local military market is, however, an area where certain unfilled needs already exist. There is little doubt that it can be further developed. Equipment and machinery repair services, and building and grounds maintenance services are two general categories

where the military appears particularly interested in making additional local purchases. The main requirement is for additional entrepreneurship and labor. For a private economy as small as Guam's, serving a military market so diversified in its needs, ready availability of any of a wide variety of goods and services at the times and in the quantities required will always be difficult. Nevertheless, opportunities are present.

III. IMPORT LABOR REPLACEMENT [19]

Since the end of Word War II, the number of alien workers in Guam has been a good indicator of general economic activity. Most of these alien workers are Filipinos, but the trust territory has from time to time contributed substantially to the total. The requirement for alien labor is often based upon an inadequate supply of highly skilled workers, but frequently they fill a demand for labor at all skill levels. Their lowest ebb in Guam occurred just prior to Typhoon Karen (November 1962) when they numbered less than 1,000. In September 1965, there were about 3,400 alien workers in the defense and rehabilitation programs (broken down into respective components of 2,900 and 500). This number has decreased since then, and further declines will occur as rehabilitation and military construction tends to completion.

While the extent cannot be accurately predicted, it is clear that alien workers would offer an immediate unemployment cushion should one be required, since many of them hold jobs requiring minimal or easily acquired skills. In addition, there is a hard core of jobs which will continue to be held by aliens even when construction is at normal levels. This core consists of aliens holding jobs that military or military-connected civilian employers say (and presumably prove) cannot be found on Guam. Some of these are esoteric (masseur, piano tuner, goldsmith, etc.) and do not represent particularly good replacement opportunities. There are others, however, at all skill levels that do. These include helpers, bartenders, bakers, mechanics and nearly all of the journeyman trades. The number of these jobs is estimated to be in the 500 to 700 range.

Another large labor import replacement opportunity lies in the approximately 1,000 stateside-hire civil service workers employed by the military on Guam. Many of these have lived on the island for several years and are, in all but the strictest political sense, permanent residents. The most realistic goal for replacement among the civil service group are the employees with the least experience on Guam (say, less than 5 years), but any job area for which local labor can be most easily prepared should be vigorously pursued. Even the permanent off-island civil servants offer a replacement potential as they come to retirement age. Each job replacement by local labor of comparable skills will benefit the economy of Guam. The local worker will expend his salary in the local economy, and the military will save recurring travel expenses and the 25-percent wage differential.

Many of the Federal civil service jobs now filled by off-islanders involve professional or vocational skills that will have to be acquired by local residents in order for them to qualify. For this reason also, therefore, continued (and intensified) measures to upgrade the educational system will require the community's best efforts for years to come.

[19] See apps. 1 and 5.

IV. PUBLIC EDUCATION [20]

Under the provisions of the Organic Act, the Governor of Guam is responsible for the territory's educational system. The executive and administrative responsibility is met through the Department of Education, an operating department of the government of Guam, headed by a director with duties analogous to those of a State director of education. Local level administrative and supervisory duties fall under a superintendent of schools. The Department's administrative staff is completed by four Assistant Superintendents (Instruction, Business, Personnel, and Vocational) and their personnel. A board of education, appointed by the Governor, guides and monitors Department activities. Two members of the armed forces sit on the Board in an advisory capacity.

The public elementary and secondary schools enroll about 17,350 students, and an enrollment of nearly 20,000 is expected for the 1970–71 school year. The public school plant consists of 17 elementary and 7 secondary schools, most of which were built (or are under construction) subsequent to the 1963 typhoon. They are modern, attractive facilities that would be the envy of many stateside communities of Guam's size. The curricula, subject matter and achievement goals found in Guam's schools are essentially the same as those of mainland schools.

As with most U.S. communities, Guam allocates a substantial portion of its budget to education. In fiscal year 1965, about 28 percent was allocated for Department of Education operating expenses alone, and for fiscal year 1967 this allocation will approach 35 percent. In his annual message, the Governor estimated that costs for education on Guam for fiscal year 1967 would exceed 51 percent of the total budget.

Guam's current, postwar education system only a few years ago saw its first students complete the 12-year cycle covered by its curriculum. Its short history, rapid growth, and conditions specific to Guam have created many problems. These problems, together with relevant historical and descriptive data and discussion, are presented in appendix 3 of this report. Problems which appear most severe and a discussion of possible solutions are presented below.

A. Administrative Staff Turnover

Guam's school system has experienced an unfortunately high turnover rate of its administrative staff. This turnover, with its resultant loss of continuity and direction, can only have hurt the system. As part of a program of corrective action designed to reduce turnover of key personnel, the government of Guam (by executive order and legislation) has granted increased autonomy to the Department of Education. The increased autonomy provides for more direct supervision

[20] See app. 3.

by the Director of Education of personnel and finance functions related to the Department.

It is too soon to determine what effect this new autonomy will have on the long-term stability of Department personnel, but it should be positive. Another factor which should strengthen Department administration is the creation of a new position—Assistant Superintendent for Vocational Education—and the acquisition of several educational consultants. With a new director, additional personnel and functions, and administrative responsibilities in new areas, the time seems ideally suited for a management study of the Department's organization and operations.

B. Instructional Staff

Since the mid-1950's, Guam has relied heavily on contract teachers from the mainland. In addition, contract teachers' dependents and military dependents contribute to the instructional staff, and the availability of these experienced teachers permits substantial savings over the costs of recruiting and transporting teachers from the mainland. In the 1964–65 school year, the proportion of instructional personnel from the component sources was as follows: [21]

Contract teachers	177
Contract teachers' dependents	56
Military dependents	162
Local hires	250

Because of the high annual turnover, an extensive and expensive recruitment campaign must be conducted on the mainland. The recruited teachers and their families are transported to Guam at government expense for a 2-year term of employment. Unlike civil service contract workers associated with military operations, contract teachers do not receive a "hardship" allowance, nor are they granted commissary or exchange privileges. The only tangible fringe benefits not generally available to teachers elsewhere are the provision of modest housing at rent levels considerably below Guam's market level and the possibility of utilizing travel allowances for travel not necessarily connected with a return trip to their homes.

In 1965, 63 new teachers were recruited from the mainland. It has been estimated that the cost of recruiting and transporting one teacher averages about $5,000. There are presently 201 contract personnel in the Department of Education, resulting in a cost of more than $1 million for this group alone. Costs related to turnover can be appreciated when one considers that half of this group has been in the system less than 2 years, and the average longevity of all contract personnel is 2.2 years. At current employment levels, Guam will expend annually hundreds of thousands of dollars in return for essentially nonproductive or at best marginally productive educational benefits; and the situation will worsen in the next few years. While the overall number of teachers is rising, both the number and proportion of contract teachers will increase as the retirement of local resident teachers occurs at a rate approximating the output of the College of Guam.[22]

The present system, which relies heavily upon contract teachers, may be the only way to maintain an American school system in a

[21] Annual report, Department of Education, 1965.
[22] This fact was pointed out in the Department of Education's 5-year plan.

distant American area; and perhaps the financial and educational costs of teacher turnover should be accepted until the College of Guam can produce enough teachers from local sources. Turnover will certainly be high so long as military dependents contribute a large proportion of the island's teachers (currently about 25 percent) but, as mentioned previously, the value of this group far exceeds the disadvantages of their temporary nature. In considering the contract teachers, however, the present system can at least be called into question.

If retention of more contract teachers is considered a worthwhile goal, the present system appears to be self-defeating. Why should a teacher renew his contract? The pay is not high, and fringe benefits are modest at best.[23] More importantly, the lack of opportunity for career development in the Guam system must weigh heavily against contract renewal. If, on the other hand, the contract teacher could see a future with adequate salary, advancement possibilities, security and a pension (as he can in most stateside systems), he might well remain to teach on Guam as a resident. It is not suggested that the civil service-type employment arrangement be offered to all contract employees. A probation period—perhaps the duration of the first contract—could serve as a basis for evaluating performance. The contract system would, of course, remain in existence to supplement the permanent teacher program. Any such program as that sketched above would require a revision of section 9a of the Organic Act as recommended by the current Governor and other responsible persons on Guam.

The current practice of cloistering teachers in government housing units contributes to the feeling of transience and non-involvement by the contract teachers. While a general dispersal of these teachers throughout the various communities would be expensive and administratively difficult, the probable value to Guam of having a more community-involved teaching staff would seem to make a study of this alternative worth the effort.

C. Academic Achievement

Scholastic achievement of Guamanian students is periodically assessed by means of standardized achievement tests. Norms for these tests are designed to represent a cross section of achievement levels in the entire United States. In the aggregate, the system's children do not fare well on these tests, but the components of the overall results point out the educational problems involved. As a group, stateside children (usually military dependents' children) do as well or better than their mainland counterparts; local children as a group score lower than the national norms; and the trust territory students score considerably lower still. While cultural conflicts and their emotional concomitants contribute to the achievement levels, is has long been recognized that the bilingual nature of the local children (as with all bilingual groups) hinders their achievement at a level expected by the system.

[23] At the beginning of the 1965–66 school year, the mean salary of 185 contract teachers was $5,482. The Statistical Abstract of the United States (p. 125) lists the average salary of all U.S. teachers as $6,235. The highest average salary was in California ($7,900), and the lowest was in Mississippi ($4,103). Guam's contract teachers are split almost evenly between the two highest and lowest salary categories of the teacher pay levels established by personnel policies. The most effective fringe benefit appears to be the provision allowing teachers to use the "return home" portion of their relocation pay for personal travel at the end of the contract period.

Given enough time, this language problem will diminish as English becomes more prevalent in Guamanian homes. In the meantime, however, thousands of local youngsters are being deprived of a substantial amount of the education available to them. Some immediate action should be taken. In this regard, the recommendations of Dr. Topping [24] and Dr. Hackett [25] should be seriously considered by the Department of Education.[26] Briefly summarized, these recommendations include:

(1) Those teaching English to Chamorro children should have at least minimum control of the Chamorro language.

(2) Teaching materials in keeping with the local situation should be developed. ("Dick and Jane" will not do.)

(3) The Department of Education should have a resident language specialist.

English teachers, then, should be bilingual and have undergone some linguistics training. They should teach English to the Chamorro children in special classes, using teaching aids and materials specially prepared for Guam. Where will these teachers be found? The required skills can hardly be acquired in a 2-year contract period, and the loss of a teacher well versed in these skills would be doubly expensive. Unless some system is created for retaining teachers on a basis analogous to stateside schools where nominal turnover is experienced, the burden must fall on local teachers. The College of Guam output and special institutes (such as that held this past summer) will definitely help, but the pace of improvement realized here will be quite slow.

The uniqueness of Guam's situation may have particular appeal to a major national foundation. The Department of Education should explore the possibility of obtaining aid for this problem from philanthropic sources. The teaching of languages, particularly of English as a foreign language, is presently a matter of great interest because of efforts to increase the educational and economic status of minority groups. The Center for Applied Linguistics at the Brookings Institution, supported by Ford Foundation funds, is one example of this increased interest; and their work is directly related to Guam's problems.

D. Educational Consultants and Specialists

The recent acquisition of several consultants and specialists has done much to fill an educational gap. Additional specialists are needed, however. Although the Department carries out an unusually ambitious testing program, its small guidance and testing staff is definitely overextended. At least one psychometrist should be hired and a need exists for trained counselors, particularly in the vocational areas.

E. Salary Levels

Average teachers' salaries in the United States have increased almost 5 percent yearly since 1960.[27] Guam's salaries have not kept

[24] D. M. Topping, excerpts from "Chamorro Structure and the Teaching of English," no date.
[25] Charles F. Hackett, "Recommendations on Language Policy in the Trust Territory of the Pacific Islands and in the Territory of Guam," 1961. Department of Education, Agana, Guam.
[26] See also Charles W. Mason, "English, Special: Teachers of Culturally Deprived." Final report to NDEA Institute Code E123-S123, June 1965; and James G. Cooper, "Conversational English for Non-English-Speaking Children."
[27] Statistical Abstract of the United States, 1965, p. 126.

pace, and the recruitment program will suffer unless improvement is made. This will be particularly true in the case of the more experienced, more highly paid teachers.

F. Vocational and Technical Training

Guam's acute need for large-scale vocational and technical training has long been recognized. In the past, recognition of this need centered upon the lack of skills of the local population, a situation resulting in large-scale, sometimes "crash" importation of workers from outside sources. While the need was recognized and discussed and while some people were trained (mostly by the Navy), little progress resulted in training local labor on any significant scale. A lack of motivation by both the users of labor (who could obtain skilled labor at bargain prices from the Philippines) and the local work force itself (able to choose among many relatively low-paid job opportunities) has contributed to the territory's low level of skill acquisition. Recently, however, the basis for the recognition of the importance of vocational and technical education has changed. There is an awareness, particuarly in government, that skill development is no longer merely an attractive and worthwhile goal but a necessity if the local population is to participate fully in the economy of Guam and—for that matter—in the changing economy of the rest of the United States.

A survey of Guam's manpower resources conducted in 1964 [28] pointed out the serious opportunity imbalances in the employment hierarchy experienced by local labor. Far more important was the rising volume of young people beginning to seek jobs. The most likely possibilities for these new entrants are in alien labor replacement, and jobs which by definition require special skills. The magnitude of the training and vocational education job to be done on Guam can be appreciated when one considers that, conservatively, between 450 and 550 young people yearly will enter the labor market in a capacity requiring some form of institutionalized training.[29] In addition to this source are large numbers of currently underemployed young people who are potential candidates for vocational education.

Fortunately, the basic elements for an increased pace of vocational training already exist or are developing. Current programs are:

1. Military Related Programs

The Armed Forces—particularly the Navy—have the longest tradition of training programs for local residents. Navy programs offered are apprentice, shop learning, and career advancement (pre-supervisory and supervisory). In addition to the more formal programs, both the Navy and Air Force provide on-the-job training (OTJ) in almost all positions filled by civilians.

[28] Odessa Dubinsky, "Survey of Manpower Resources, 1964–1970," Territory of Guam, June 1964.

[29] The assumptions underlying this rather informal projection are as follows: (a) a 40-percent dropout rate. The graduating classes represent about 60 percent of those students entering the system 12 years earlier. These dropouts constitute an even greater training problem. (b) The number of males and females graduating high school is about equal. Forty percent of the graduating class goes on to college. Forty percent of these drop out and enter the labor market. Only 10 percent of the new college females will enter the labor market. Each year, 100 noncollege males will enter military service.

2. GUAM APPRENTICE PROGRAM

This is a government of Guam-Guam Contractors' Association program of recent origin whose purpose is journeyman development in the basic trades. The goal of the program is alien labor replacement.

3. TRADE AND TECHNICAL SCHOOL

Guam's Trade and Technical School is a vocational high school under the Department of Education. Preentrance level training is provided in the basic trades. In addition to the diploma program, evening courses are offered and are well attended.

4. COLLEGE OF GUAM

Although the college has changed its original community college concept to a liberal arts emphasis, it still provides considerable skill-gaining opportunities at the post-high-school level. These are mainly in the business and business-related fields.

5. MANPOWER DEVELOPMENT AND TRAINING ACT (MDTA)

The goal of this Federal program is to train and/or retrain individuals to the needs of a skill-demanding economy. The format of this program provides for pressure-cooker training aimed at actual skill deficits of the community or region. This format, together with recent successful experiences, makes it well suited to Guam's needs. Three new projects—carpentry, welding and masonry—have recently been undertaken.

6. GOVERNMENT OF GUAM

An inservice program designed to upgrade skills in almost all categories of government employment is sponsored by the government of Guam. Development of professional and subprofessional categories is conducted in liaison with the College of Guam.

7. PRIVATE BUSINESS

As elsewhere, almost all employees require some training specific to the individual employer's operations. Because of the lack of skills on Guam, however, employers find themselves involved with informal OJT to a greater extent than their mainland counterparts.

8. VOCATIONAL REHABILITATION

This program is designed to develop occupational skills of the physically and mentally disabled. Here, need far exceeds capabilities of current facilities and personnel.

A state plan for vocational education on Guam (under Public Law 88–210, 1963) has been approved by the U.S. Department of Health, Education, and Welfare. On the basis of this approval, Guam is eligible for additional funds. Current plans call for developing expanded programs in the trade and technical school. Necessary plans and applications for participation in the Youth Corps program have been completed and final approval is pending.

The listing of vocational programs presented above—many of quite recent vintage or still developing—indicates that a broad basis for training and technically educating Guam's youth is beginning to emerge. Every effort should be made to maintain the momentum generated by new programs such as MDTA, together with an expansion of the scale and pace of other programs. If the stop-go history of past vocational education is to be ended, some office, individual or group of individuals with professional or direct economic and operational interest in the problem must undertake coordination of the various program efforts.

There are several formats for this function. One is a territorial board of vocational education proposed by the College of Guam.[30] Besides being the clearing agent and manager of all Federal vocational education funds, this board would provide broad leadership in all related areas and maintain liaison between involved public and private jurisdictions or agencies. In contrast to this proposed group (to be composed of a board of regents and business and labor representatives), it is suggested that any coordinating body consist of persons directly concerned with vocational education on a continuing basis.[31] Persons with this continuing interest and responsibility would be the Assistant Superintendent for Vocational Education; the MDTA coordinator; the CIRO staff members; the Guam contractors' representative; members of the College of Guam, the Guam Employment Service, and other government of Guam agencies. If such a group appears unwieldy, an alternative suggestion would be to have a core of Department of Education professionals maintaining necessary liaison with the other elements.

Whatever the constituency, the first order of business is the development of a comprehensive, islandwide plan for vocational and technical training. The scale of the required effort over a period of time can be estimated by a thorough application of factors such as those contained in footnote 2, p. 5. Matching the training of potential candidates against future requirements is not difficult on Guam since there is little likelihood of producing surplus skills; but priorities should be established, based upon urgency of community need for particular skills and the probability of success in meeting these requirements.

Accompanying overall strategy development should be a thorough analysis of difficulties encountered in past training efforts on Guam. While it might be unfair to term the current apprentice programs failures, the fact remains that Navy programs annually graduate about 25 journeymen, the contractors' program presently has only 47 enrollees, and the Air Force has no apprentice training program at all. Interviews and discussions with Navy personnel reveal that the basic preparedness of entrants into the apprentice programs has vastly improved during the last few years. Similar improvements were also noted in motivational and attitudinal characteristics of the apprentices, and the dropout rate of new apprentices is now no more than that of similar stateside programs. In view of this, it seems likely that this aspect of Navy-sponsored training could be accelerated in the near

[30] College of Guam, "Proposed Schemata for a Vocational Technical Institute for Guam," April 1965.

[31] This proposed group differs from the government of Guam-Contractors' Committee on Apprentice Training in that it would deal with all types of training in all areas of employment over a greater period of time. The proposed group is not an advisory body, but a group of professionals with an interest in vocational training.

future. A matter of immediate interest is the experience gained with the recently inaugurated government of Guam-Guam Contractors' apprentice program. What appears to be a failure of communication between the training personnel and the apprentices has resulted in a disappointingly low number of continuing apprentices. All elements of this program should be reviewed and a new effort made to be sure that trainees are thoroughly aware, at the time of their selection, of the demands they must meet.

In summary, vocational and technical education in Guam is of sufficient importance that its diverse elements should be surveyed, assessed and coordinated by a continuing body responsible to the government. The group should consist of vocational educators and others responsible for training programs. The first task should be a plan covering all forms of training, vocational and technical education.

The Department of Education's 5-year plan (fiscal years 1966–70) indicates little increase in the enrollment of secondary students in the trade and technical school. If current high standards are continued and the planned curricula is achieved, the trade and technical school will provide by far the best opportunity for entrance-level vocational education on Guam. Projected enrollment appears much too low in the face of Guam's problems, and the Department of Education should undertake a review of the plant, facilities and staffing levels of this school.

While the College of Guam currently offers opportunities for post-high-school vocational and career training in business, no formal program exists for terminal training in trade or technical fields. College officials have frequently indicated the need and their willingness to operate such an institute under the college's control. Unfortunately, at least in one proposal,[32] the college would develop its institute using the Department of Education's Trade and Technical School facilities.

The status of the secondary vocational programs was not made clear in the proposal; presumably these would be restricted to industrial arts courses in the high schools or vocational training in the presently inadequate facilities. There is definitely a need for post-high-school technical training on Guam, but its development should supplement rather than replace present programs. A possible solution is the extension of the Trade and Vocational school through postgraduate offerings. The postgraduate curricula would consist of extensions of secondary curriculums as well as programs available only to graduates. College of Guam participation in such a program would provide many advantages, including a ready staff of instructors in technical and supplementary academic areas. In addition, the prestige of a COG certificate would probably induce enrollment by graduates of the regular high schools as well as the vocational and trade school.

G. College of Guam

The College of Guam enjoys a unique position among U.S. institutions of higher education. Like Guam itself, its location is one of the greatest assets. Already it has influenced the future of the West-

[32] College of Guam, "Proposed Schemata for a Vocational Technical Institute for Guam," April 1965. Proposal not submitted.

ern Pacific through educating the trust-territory students who will be the area's teachers and leaders in the years to come. New programs to increase the educational level of the trust-territory residents will create even greater interest in the college. In fact, the factor limiting future trust territory enrollment figures will probably be college policy.

Success in attracting these students, coupled with general acceptance by the Guam community, has created a feeling of optimism and expansion among college officials and other leading citizens of Guam. Since the appeal of an American education is very great, a first-rate college (perhaps with an international staff) would undoubtedly draw students from other Western Pacific areas as well. Such an occurrence would provide many benefits to Guam—not the least of which are recognition, prestige, and almost certain tourist interest.

Despite its attraction (and it should certainly be a goal of the college), this line of development probably lies far in the future. The college is spread quite thinly in several academic areas, and a general strengthening of the present baccalaureate program is needed before a significant expansion is attempted. The college bears an obligation to the community to emphasize teacher training until the end of this urgent problem on Guam is within sight. A University of the Western Pacific or a Pacific Education Center would require a strong instructional staff and administrative personnel with operational and financial freedoms much greater than those now granted. Considerable autonomy is a definite requirement for such a staff, and even the Guam Memorial Hospital model would probably be insufficient.

Finally, any such program would be expensive, and additional funds for education are always difficult to obtain. Since many of the benefits of the required investment would be intangible, funds from the local community may not be readily available. On the other hand, because the proposed expansion programs may complement and serve national goals in the Western Pacific, Federal funding might offset much of the cost. Solution to the college's current problems, however, would still be required. Principal among these is the effective acquisition and retention of an instructional staff, a problem similar to that encountered by the public schools. For example, an approximate 25 to 35 percent contract staff turnover occurs each year. The average COG experience at the beginning of the current school year approximated 1.7 academic years, and median experience was less than 1 year.

In a sense, college recruitment and retention are even more difficult than for the public schools since the solution cannot be gained internally to Guam. In time, the college's output may alleviate or solve the public school teacher problem—but it cannot educate its own staff. It must depend upon the mainland and perhaps foreign sources for its professors. If the college is to succeed in its more ambitious plans—indeed, if it is to become a first-class liberal arts college—something must be done to stabilize the constituency of its academic staff. The most straightforward means to accomplish this is to increase salaries to attract the high-caliber persons the college needs and, once hired, offer them the kinds of working conditions (including tenure) which will promote development of a core of professors around which the college

can grow.[33] A 2-year contract period is inherently wasteful, both for Guam and for the staff. New instructors (and many are relatively inexperienced) must spend time getting acquainted with Guam, administrative procedures and the student body—in short, "settling in," as with any other occupation. The time to accomplish this varies by individual, of course, but some essential time is spent at less than optimal performance. Reduced performance can also be expected prior to departure. When one considers the frequency of such turnover and repetition of the replacement process, it becomes clear that the college cannot afford to ignore remedial action.

Occasionally, staff rotation does benefit the college; it can thus attract adventuresome, capable people who might want to spend only a few years on the island. This is particularly true in those instances where Guam can offer advantages to research-oriented professors in such fields as anthropology, linguistics and marine biology.[34] Yet it must be argued that a core of continuing academic staff is necessary in each division and major subject area within the divisions if the programs, institutes and centers predicted for the college's future are to develop. Admittedly the problem of tenure for COG is a difficult one, and we would not attempt to develop a system here. If and when a system is developed, it should reflect the goals and philosophy of the college administration and its board of regents. The present arrangement grants a kind of tenure, without regard to merit, on the basis of origin and therefore de facto by race. Obviously, this is not a type of tenure system in keeping with a publicly supported college in the American system.

	Instructor	Assistant professor	Associate professor	Full professor
College of Guam	$6,141	$6,926	$7,696	$9,122
Total United States	$6,386	$7,539	$8,905	$11,165
Percent difference	4	8.8	15.7	22.4

Source: Statistical Abstract of the United States, 1965, p. 131.

[33] College-level instructors are currently enjoying a seller's market for their services. Considering COG's modest salaries, it is surprising that the college is able to recruit a major portion of its necessary contract staff each year. In the table below, the 1964 mean salary of COG personnel by academic rank is compared with salaries of public liberal arts college personnel in the United States. Also noted for each rank is the salary advantage of all U.S. personnel. Note that COG's competitive position becomes poorer in the upper ranks.

[34] One proposed solution to College of Guam's staffing problem seems to merit special consideration. That is recruiting and hiring retired professors in the manner of the Hastings Law School of the University of California.

V. REQUIREMENTS AND RESOURCES IN THE PUBLIC SECTOR

The conclusions and recommendations included in the preceding discussion add up to two programs of action—one for the government of Guam, the other for the Federal Government. Because of the many uncertainties and contingent factors, it would hardly be feasible to set up anything approaching a precise schedule for carrying them out. Action on most of the recommendations should be initiated as soon as possible because inevitably there will be delays in achieving some of the objectives. At this point, therefore, the focus is shifted to the important question of how large the job is, what resources are available for doing it, and what other actions will be required.

A. Government of Guam

1. Components of the Plan

Major components of the development plan for which the Government of Guam will be responsible may be recapitulated as follows:

Export industry

(*a*) Establish promotion office in the United States and increase expenditures on research and promotion of selected industries.

(*b*) Select industrial park site(s), establish site plans, do rough preparatory work, and construct one or two small general purpose buildings for light manufacturing.

(*c*) Ascertain availability of U.S. excise taxes on Guam products to Guam Treasury and legality of drawbacks.

Import-replacement industry

(*a*) Actively seek off-island farm entrepreneurs to establish commercial farms in Guam through promotional office.

(*b*) Establish close contact with military purchasing and supply agencies, determine precisely the kinds of locally supplied services most needed by the military, and establish these as objectives to be pursued by the Guam Economic Development Authority in cooperation with local business groups.

Tourism

(*a*) Arrange early initiation of resort hotel project.

(*b*) Work closely with U.S. Department of the Interior to complete all steps necessary by the government of Guam to facilitate Federal action on National Park Service recommendations.

(*c*) Complete detailed plan for Agana-Tamuning area, including shopping district, and work with local business groups to define and obtain support for precise objectives. Reapply immediately for urban renewal assistance on this project.

(*d*) Initiate 2- or 3-year cleanup campaign in cooperation with local business groups.

(*e*) Increase tourist promotion budget and prepare promotional campaign to begin prior to completion of hotel.

Transportation

(*a*) Press case for additional link to Western Pacific area and lower fares on Guam-Honolulu service with Civil Aeronautics Board and Department of State.

(*b*) Press case with Federal Government for removal of Guam from coastwise shipping regulations.

Education

(*a*) Management study (administrative) is necessary.

(*b*) Early investigation and action on feasibility of "permanent teacher program" is required.

(*c*) Establish linguistic teacher programs; develop proposal to foundation for study of linguistics application in the teaching of English.

(*d*) Hire additional counselors.

(*e*) Appoint and support standing vocational education committee.

(*f*) Increase capacity of present vocational school and develop post-high-school vocational and technical school using facilities at same location.

(*g*) Increase teacher salaries to be competitive at all experience levels.

(*h*) Establish tenure and salary adjustments at the College of Guam.

Many of the actions and programs listed above are costless or involve only nominal cost. The total cost increment (gross) above and beyond present programs is probably on the order of $1 million in capital or one-time expenditures, and $2.5 million annually, the bulk of which is attributable to education and training. These figures, it is emphasized, are not estimates or recommendations but informed guesses as to the magnitude, with a reasonable allowance for contingencies. It is a fairly simple program; many of the essential elements depend more upon early, appropriate and effective action than upon large expenditures. Guam's future economic progress may depend on how well these few things are done because, to put it bluntly, there may not be any alternatives consistent with continued economic progress.

2. OTHER DEMANDS ON GOVERNMENT OF GUAM RESOURCES [35]

Guam's ability to pay for the development program will be affected, of course, by the present and prospective fiscal position of the government. Repayment of the rehabilitation loans (assuming 4 percent annual interest) might result in annual costs of nearly $1.7 million by 1971, continuing to 1998. New school and other public facilities under construction or planned will add to the government's maintenance and operating costs as they come into use. Some losses may be expected in the early years of operation of the new air terminal. Costs of road and park construction and other capital projects of a regular

[35] See app. 7.

nature may increase somewhat in the future. Health and welfare activities may be stepped up. The trend of the government's general fund operating expenditures has been sharply upward for the past decade, and upward pressures can be expected to continue in the future.

During fiscal year 1965, government operating expenditures from the general fund amounted to $17 million as compared with $11.1 million in fiscal year 1960. Considering only the population living in the civilian community, this represents a rise in per capita expenditures from about $252 in 1960 to perhaps $340 in 1965. Costs of State and local government have been rising rapidly in the United States, and Guam is no exception—but it does not appear the Guam's 1960–65 rate of increase can be maintained for long. Precise per capita figures are difficult to establish for Guam because the population in the civilian community is not accurately known, and also because for some purposes (such as schools) part of the military base population is also relevant. It is doubtful that the military base populations contribute substantially to government expenses for other purposes in the civilian community; but in order to take account of such costs, the population base of the civilian community is arbitrarily set at 55,000 instead of the less than 50,000 estimate that would otherwise apply. On either basis, Guam's per capita expenditures place it among the States having above-average per capita costs for State and local government combined. For "pure" governmental purposes alone, Guam's per capita operating expenditures (55,000 population base) are compared below with data available from mainland States in 1963–64:

	Guam	U.S. average	Lowest State [1]	Highest State [1]
General control and financial administration	$47	$13	$7	$38
Education	112	115	NA	NA
Health and hospitals	53	23	10	42
All comparable purposes	320	276	NA	NA

[1] Lowest and highest States in each category in each column; columns do not, therefore, add to a total that applies to any one State.

NOTE.—NA—Not available.

Government expenditures for education and medical services are also shown. Guam is closest to the U.S. average in education, but some expenses that elsewhere would be included in expenditures on education are carried in other accounts in Guam (e.g., provision of school bus service and school maintenance by the Department of Public Works, and inclusion of travel expenses for schoolteachers in the general transportation account). If these could be accurately reassigned to the education function, Guam's per capita expenditures on education would appear somewhat higher than the 1963–64 U.S. average, and the purely governmental functions would not appear quite so far above the U.S. average. The high figure for medical services reflects the extensive use of government-operated medical facilities on a nonself-supporting basis, a practice which developed historically because of necessity but which continues now on the basis of custom as well as need. It is worth noting that the states with highest government costs are Alaska and Wyoming, both of which

have certain characteristics and problems in common with Guam. No state, however, has so frail a private economic base with which to support its governmental structure as does Guam.

Guam's total general fund revenues, amounting to $330 per capita (on the 55,000 population base) in fiscal year 1964–65, place it somewhat below the average state in this respect. Most of Guam's revenue is derived from the Federal Government, as indicated below, with 1963–64 State comparisons:

	Guam	U.S. average	Lowest State [37]	Highest State [37]
From Federal Government	$216	$52	$28	$305
Grants-in-aid	32	52	26	363
Income tax	184			
From own local tax sources	89	250	146	349
Property tax	12	111	29	175
Charges and miscellaneous	25	51	NA	NA
Total from local sources	115	301	186	424
All sources	330	353	222	721

[37] Lowest and highest States in each category in each column; columns do not, therefore, add to a total that applies to any one State.

NOTE.—NA—Not available.

Although Guam receives more per capita revenues from the Federal Government than does any State (except Alaska), most of this consists of Federal income taxes covered into the Treasury of Guam as provided by the Organic Act.[38] In regular forms of Federal assistance (excluding the post-Karen emergency and rehabilitation funds), Guam is well below the average state. Indeed, the bulk of such assistance consists of payments to cover the cost of public school education for children of off-island defense-connected personnel under Federal impacted area legislation. Only $13 per capita is contributed by other Federal programs, and this would appear to be far lower than the comparable figure for any State. States receiving the largest per capita amounts of Federal grants-in-aid in fiscal year 1963–64 were Alaska and Wyoming. Other territories are not shown for lack of closely comparable data, but both the Virgin Islands and Puerto Rico receive far more Federal assistance per capita than does Guam. Finally, in revenue from local sources (excluding the territorially collected equivalent of Federal income tax), Guam ranks lower than *any State*.

The important features of Guam's fiscal situation, then, are (1) a relatively high level of Government expenditures, particularly for ordinary public administration functions and for medical services; (2) a moderately low level of government revenues derived mainly from Federal income tax transfers; (3) relatively low revenues from regular Federal assistance programs; and (4) exceptionally low revenue from conventional local sources, particularly from property taxes. Further rises in ordinary government expenditures, together with the costs of the economic development program, will place considerable strain upon Guam's ability to pay.

There are four methods by which the fiscal requirements can be met: (1) obtaining additional Federal assistance; (2) obtaining more

[38] Legal tests have been established that the portion of the Federal income tax revenue collected directly by the government of Guam is a territorial rather than a Federal tax. For practical purposes, however, like the portion collected by the U.S. Internal Revenue Service, it is in effect a transfer of Federal taxes.

tax revenue from local sources; (3) reallocating government resources to use more of them in the areas recommended and less in certain other areas; and (4) seeking out and taking advantage of any possible opportunity to reduce costs and increase the efficiency of government operations.

3. MEETING THE FISCAL REQUIREMENTS[70]

a. Federal assistance

As noted above, regular Federal grants received by Guam have comprised both a smaller proportion of total revenue and a smaller per capita amount than those acquired by most States. The average proportion of State and local revenues that are derived from Federal sources is 15 percent, and the proportion in some States is significantly higher. Guam, however, has obtained less than 10 percent of its revenues from grants. This discrepancy is due partially to the differences between the types of programs in which Guam participates and the overall distribution of aid. Highway and public assistance programs account for nearly 70 percent of all Federal grants but only 10 percent of Guam's grants are for these purposes, for understandable reasons. The bulk of its aid is received for education, particularly under programs for schools in Federally-impacted areas. This exceptional circumstance makes direct comparisons of education grants between Guam and the rest of the United States unsuitable, whether on an absolute or a per capita basis.

The variance between Guam and the States is even more pronounced when considered in per capita terms. In 1965, the average per capita grant in the United States was $56.86, versus $31.40 in Guam (55,000 population base). If highway funds are excluded, the U.S. average drops to $35.69. Health, labor, and welfare programs yielded $24.41 for the States but only $10.10 for Guam. Although data on grants received by other territories and possessions are not available for 1965, in 1964 the Virgin Islands received over $45 per capita and Puerto Rico over $20 for health, labor, and welfare programs. No funds were received by Guam for agriculture, communication, and transportation, or housing and community development. The appropriations for 1966 will provide increases in both per capita and proportion of revenue amounts. However, the additional funds are not sufficient to raise these to the U.S. averages and, furthermore, the imbalance in areas of assistance still persists.

The peculiar distribution of assistance programs can be ascribed to several conditions. There are some programs which are not particularly needed by Guam. For example, the highway programs are far less important to the island than to most States. The importance placed by the Federal Government on good communications, however, does militate for action to lower air and steamship rates and to improve service between Guam and the United States. For Guam, an equivalent of the Federal highway program would be funds for the alleviation of sea and air transportation problems. There are other more basic difficulties created by the rules governing the coverage of Guam by Federal laws. It is only able to receive assistance under those programs for which the enabling laws explicitly mention Guam by name or by reference to possessions. Even under those programs which do apply, Guam may have to show proof of need by presenting

[70] See apps. 7 and 8.

unemployment percentages, per capita income statistics, or other data. The inadequacies of its social accounts make such estimates difficult if not impossible on any reliable basis. In other cases, grants are distributed among the States and possessions on a proportionate-to-population basis. Guam thus can receive only a small amount.

Since there are more than 100 Federal assistance programs, it was not possible to study each in order to determine if those programs now being used are fully exploited and, of those programs not currently employed, the ones which appear significant to Guam's economic development. It is not even desirable that Guam should be interested in acquiring grants under as many programs as possible. Rather, the limitations created by available management and requirements for matching of grants necessitate the efficient utilization of those programs which will provide the most benefit to Guam's development. Many of the programs in which it now participates satisfy this criterion, particularly the Economic Opportunity Act, the manpower development and training program, and the public assistance program. Those that are not now being used but which have been identified as good sources of aid are listed in the appendix. Following are some which appear especially promising.

Public Works and Economic Development Act

Provides direct grants (up to 50 percent) and supplementary grants (up to 80 percent) for public works and development facilities. Further authorizes loans of up to 100 percent on such projects. Private businesses can receive loans to 65 percent of the total cost for land, buildings, machinery, and equipment. Technical assistance is available in the forms of management and operational aid to private firms and training of personnel to administer state and local economic development. Guam has been designated as an eligible area for assistance under this act.

Housing and Urban Development Act of 1965

Financial assistance is given for several purposes, including aid for homeowners in urban renewal areas; community and neighborhood facilities, such as youth centers and health stations (up to 75 percent); acquisition of open space land and development for park and recreational purposes, conservation, and historic and scenic purposes (up to 50 percent). Technical assistance is available for preparation and execution of urban plans.

The importance of technical as well as financial aid offered by many of these programs cannot be overemphasized. Federal technical assistance is especially needed for establishing an adequate system of social accounting. The lack of income and population data interferes with the ability of the government to plan or to know where it has been, where it is now, and where it is headed. As mentioned above, this information is also frequently needed to qualify for Federal assistance programs. The U.S. Departments of Labor and Commerce could provide assistance in setting up the machinery for obtaining accurate population data, personal income statistics, labor force and employment estimates, and cost of living estimates. It is strongly recommended that the Government of Guam emphasize this area of assistance and encourage active Federal participation on the scene in

Guam. An obvious example is a request to the U.S. Department of Agriculture to establish an office in Guam (as recommended previously).

Federal assistance has contributed importantly to Guam in the past, but more extensive use of Federal financial and technical aid is possible. The funds which might be procured cannot be accurately estimated at this level of analysis, but Federal assistance will be a significant source of revenue for future development. Careful evaluation of all programs must be made in terms of function, amount of grants, matching requirements, and availability of technical assistance in order to optimize their utilization for economic development.

b. Local taxes

Tax revenues from local sources are disproportionately low in Guam, even after account is taken of the fact that average per capita income in the civilian community is far from high. The question of tax policy is now under active consideration by the government of Guam, and it can be expected that steps will be taken to increase local tax revenues. Such revenues have increased over the years (starting from a level of zero in 1949), but the availability of the Federal income tax funds has in the past relieved Guam of much of the fiscal burden carried by local taxes elsewhere.

This situation is now changing, and Guam will increasingly face the same kinds of hard fiscal decisions so troublesome in most mainland communities. The tax rebate powers given to the Guam Economic Development Authority also mean that addition of new basic industries may not increase the property tax base for a number of years (except indirectly through the stimulation of local service industries). There is obviously an ability to support some increase of local taxes, however, and such increases will have to be made—painful or not. It can be anticipated that the rising local tax burden will create intensified interest in the community in the topics discussed below, just as it does elsewhere.

c. Reallocation of government resources

The development actions recommended here clearly call for heavy emphasis upon education and smaller but substantial new efforts in the areas of industry and tourist promotion and community redevelopment. Although increased Federal assistance can probably be obtained for these purposes, it will be necessary also to find areas of current government expenditure in support of functions that have less developmental "leverage" than those proposed. Reduction of government expenditures in the field of agriculture is appropriate, for example, particularly if efforts to obtain USDA services are successful. Substantial savings might be realized through an evaluation of the real effectiveness and costs of the village commissioner system. Maintaining a major government construction capability in the Department of Public Works may not be worthwhile when competent private contractors are available. Placing the Commerical Port under private contract management would probably reduce or eliminate losses now made up from the general fund and relieve government departments of the need to provide support functions such as purchasing and policing.[40] Public safety services may

[40] It has been argued that the hazard of a crippling port strike would be increased if the government were not the port operator, but even this factor may not outweigh the advantages of regulated private management.

not need to be provided so liberally. Very difficult choices may have to be made in the field of housing, where need is great but where local government funds now used for home loans may be reaping less long-term benefit than they might in direct developmental applications.

The examples above, although considered valid, merely suggest the kinds of re-emphasis which will be appropriate. The community itself must choose, and such choices are never easy.

d. Cost reduction

Operational efficiency in government (as distinct from resource allocation) is an across-the-board matter. Wherever opportunities exist for improving the productivity and lowering the cost of government functions, there will be increasing need to utilize them as the financial burden of development makes itself felt. Maximum effectiveness of government management and operational procedures will be sought by the community. Specialized management studies of government activities have been made in the past and will be required in the future. There can be no doubt that acting on the recommendations and advice offered by competent analysis will make substantial savings possible. This is true of most organizations, but in Guam the need for realizing such savings will be especially great. Here again, without attempting to anticipate the results that will be yielded by detailed management studies, areas where the possibility of improvement might be considered include the following.

Turning over government utilities to private, regulated ownership or to contract management (as in the case of water) might yield lower rates and reduce costs to government. Commercial trash collection, now being considered, might yield savings. Changes in procedures and use of automated equipment could yield substantial savings in government financial management. Analysis of purchasing, replacement and maintenance policies for vehicles and other equipment may disclose opportunities for reducing costs and improving utilization. Greater collection of medical bills owed to Guam Memorial Hospital could be a substantial additional source of revenue. School bus costs might be reduced by using part-time rather than full-time drivers. Improved practices in hiring, utilizing and promoting government personnel will be found capable of decreasing total personnel requirements for the performance of almost all functions. Such examples are hardly definitive, but it is considered highly probable that government investment in and acceptance of a thorough management analysis will effect cost savings over the years to pay much of the cost of the development program.

4. EFFECTIVE PLANNING AND ACTION

The future fiscal requirements of the government of Guam, including those inposed by the development program, can be met by combined use of the four methods discussed above. In order to carry out the program and to deal effectively with the many other planning needs of Guam, a strong planning unit should be created as a staff agency to the Governor's office.

The point should be stressed that we do not refer here simply to the community and land-use planning function, but to policy and program planning in its broadest sense—including all phases of fiscal

planning, rational budgeting and budgetary control procedures, strong financial management and enlightened personnel policies—to insure maximum effectiveness in the selection and achievement of government objectives. Past studies have stressed the importance and need for a purification of the planning responsibility and the need for an effective planning arm for the Executive. Planning and all of its ramifications must make use of qualified professional people, and their advice must be heard before top executive decisions are made. The planning agency must have the responsibility to develop long-range economic, fiscal and physical plans for the island. Once the plans are adopted, the government must see to it that the elements are pursued in a coordinated manner by the various line departments. Full coordination and cooperation with the Guam Economic Development Authority is obviously essential.

This requirement is considered critical, and it will not be met unless the content as well as the form of the planning function is adequate. Discisions must be made sooner rather than later and, once made, carried out with speed and thoroughness. Nothing in the present report (as observed earlier) will come as a surprise to the citizens of Guam who have heard similar recommendations before. What is now needed is a new sense of urgency and responsibility in carrying out the community's present obligations to its future citizens.

B. The Federal Government

Many of the courses of action discussed in previous sections of this report depend upon prior or concurrent action by some element of the Federal government, as outlined below.

Guam development area	Federal agency	Recommended action
Tourism	Department of the Interior	Follow through on implementation of Park Service recommendations.
Do	Department of State; Civil Aeronautics Board.	Negotiate additional airline service to Guam.
Do	U.S. Congress	Increase duty-free tourist exemption to $400.
Manufactured exports	Bureau of Customs	Clarification of policies and procedures regarding provisions of headnote 3a.
Do	U.S. Congress	Exemption of Guam from coastwise shipping rules.
Manufacturing (oil refinery).	Department of Defense	Sustained military procurement, as permitted by logical support possibilities.
Import replacement (agriculture).	Department of Agriculture	Establish full-scale USDA research and extension operations in combined Guam trust territory jurisdiction.
Do	Department of Defense	Include MSTS freight rates in determining competitive position of Guam products.
Transportation	do	Expedite Commercial Port project by moving ammunition wharf and making land available.
Technical assistance (statistical procedures).	Department of Labor; Department of Commerce, Bureau of the Census.	Assist government of Guam in setting up accurate and viable system for basic social and economic statistics: (1) Population and labor force data; (2) employment and wage statistics for private sector; (3) personal income accounts; and (4) cost-of-living indexes.
Communication	U.S. postal service	Precedence to Guam in proposed "priority mail" system. All 1st-class mail to be carried as airmail.
General	Department of the Interior, Office of Territories.	Represent Guam more actively. Act as agent in intra-Federal matters. Influence development policies, where possible, to achieve greater consistency between Guam and trust territory policies.

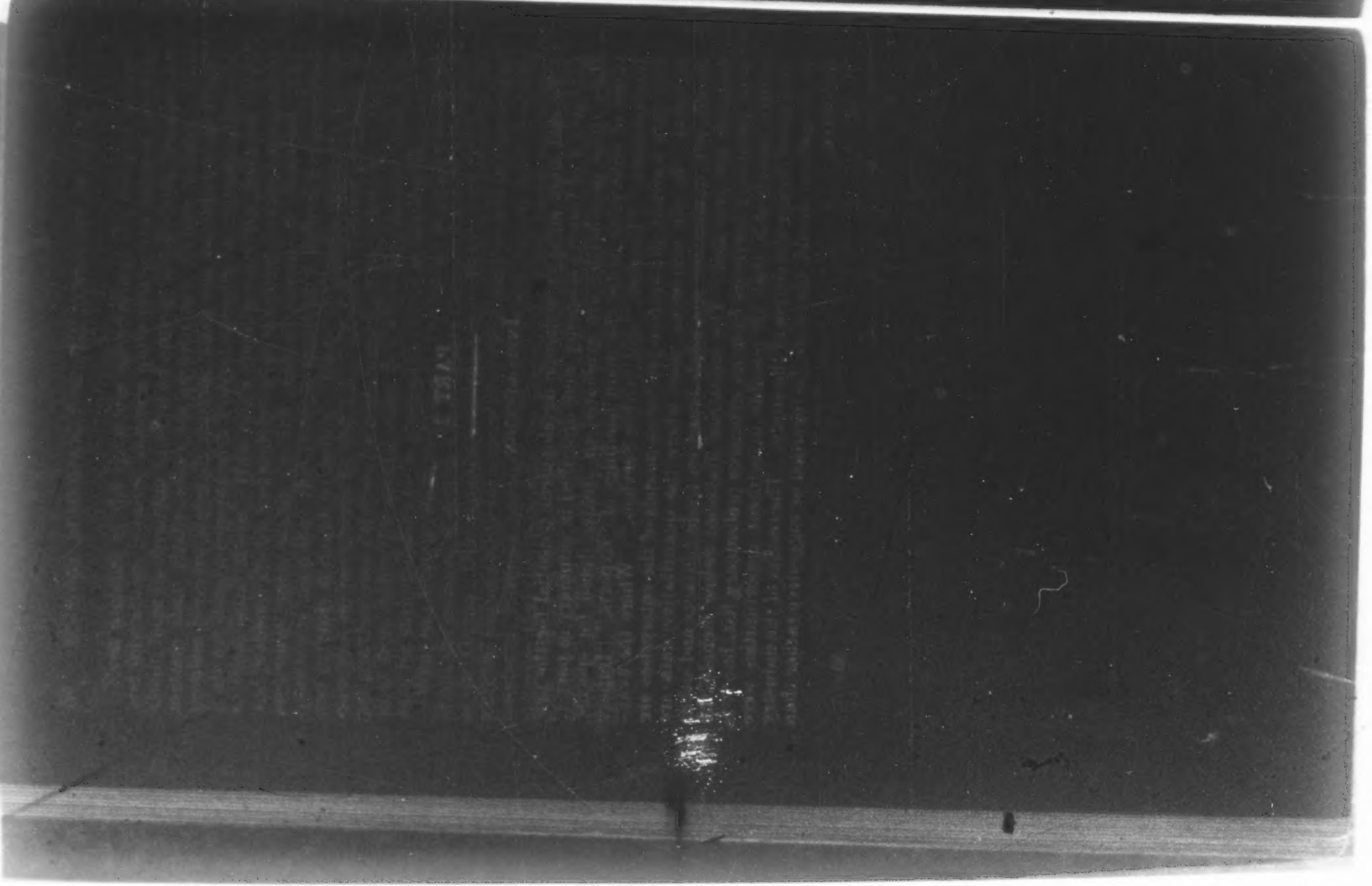
Even a glance at the numerous agencies and the complex actions and interactions involved suggests quite clearly the kind of problem Guam faces in obtaining timely and appropriate Federal decisions on matters that vitally affect its present and future welfare. This problem becomes especially striking when one considers that Guam is always deeply engaged with Federal agencies on matters additional to those listed above. How can a small community make its needs and problems known and understood in the large, distant bureaucratic structures upon which (in the case of Guam) it depends? The question is more than rhetorical; it expresses a difficulty that is real and urgently demands attention. Many of Guam's needs are special ones that do not always fit well into monolithic Federal programs or policies that were designed for major mainland requirements. Deviations from policy for special cases is always troublesome, and it is easy for such decisions to be postponed or lost in the shuffle.

What can be done, we do not know. But we are as much concerned about the problem of getting the necessary things done in Washington as in Guam. One suggestion is that the Office of Territories be assigned responsibility for a more active and positive role in promoting territorial interests through liaison between Guam and Federal agencies that are important to Guam. Possibly there are better ways. What is improtant is that the recommendations for Federal action be treated (so far as possible) as a package, all or most of the parts of which are interdependent. If each Federal decision is made independently, out of context, there is no plan.

PART 2

Introduction

Several main areas of economic development potential for the private sector of Guam's economy were described in summary in part 1. Here these possibilities are evaluated in greater detail for specific types of enterprise under the main headings of "Exports," "Import Replacement," "Tourism," and "Other Services." Where the available data warrant, illustrative pro forma models of the enterprises are included. In the numerous cases where the quantitative data are insufficient, qualitative appraisals based on trade contacts and other research are provided. The industries discussed below include the most promising survivors from an extensive preliminary list, but it is hardly conceivable that all possible investment opportunities were uncovered during the course of the study. The results of the industry investigations should, therefore, be regarded as suggestive rather than definitive.



I. EXPORT OF GOODS

Nearly all possible Guam products for export fall within the general category of assembly manufacture. Since Guam does not have either a broad industrial base or developable raw materials in substantial quantity, there is little else in the way of manufacturing that can be done.[1] The likelihood of assembly manufacture depends almost wholly on two provisions of the law: (1) Guam's status as a free port outside the customs territory of the United States; and (2) the exemption of its products from U.S. import duties under the provisions of section 301 of the U.S. tariff laws. This law provides that (under certain circumstances) products of U.S. territories and possessions may enter the United States duty free. Such articles must qualify as products or manufactures of the territory, and they must not contain dutiable foreign materials exceeding 50 percent of total value. This total value is determined by bona fide sale or offer for sale not including freight to the United States. Value of the dutiable foreign materials is determined by their bona fide purchase price including freight charges to the territory.

These provisions of the law may enable a Guam manufacturer to enjoy a competitive advantage against both foreign and domestic U.S. manufacturers. The free-port provision may enable him to obtain parts and subassemblies duty free from foreign producers for substantially less than his U.S. competitors. If this advantage is sufficient to offset additional costs due to freight and a small-scale operation, the Guam product can compete successfully with domestic products in the U.S. market. Conversely, the Guam product can compete successfully with foreign products in the U.S. market because the latter are subject to import duties while the Guam manufactures are not—provided, however, that the duty is sufficient to offset higher labor rates in Guam.

The foregoing is not to say that anything made on Guam will enter the United States duty free and be competitive with all producers, domestic and foreign. Rather, the product must be carefully selected so that the U.S. duties on both parts and finished goods are quite substantial,[2] and that the cost of foreign parts is substantially below that of U.S. suppliers. The margins thus generated must be sufficient to more than offset any disadvantages on labor costs and freight charges if the Guam product is to be competitive in the marketplace.

In the following paragraphs, analyses of various manufacturing operations are made. In the course of preparing an initial list of candidates for study, the Tariff Schedules of the United States were screened. All products having an effective ad valorem rate of duty of 20 percent or greater were examined. Many of the items on the initial list were eliminated after preliminary study. Principal reasons for early elimination were little or no duty on foreign parts, high freight costs and insufficient price margins on foreign parts. The final list, which was by no means exhaustively covered, is shown in table 3.

[1] An exception is the canning of tuna fish which relies on a natural resource, tuna, which is available in sufficient quantities near Guam.

[2] Duties must be at least 20 percent, but preferably on the order of 30 percent or more.

TABLE 3.—*High tariff items for potential development*

U.S. Tariff Schedule No.	Description	Tariff rates	
		Stated	Ad valorem percent
206.67	Wood blinds, shutters, screens, etc.		
220.80	Articles of cork, NSPF [1]		40
222.50	Blinds, shutter, etc., of woven, unspun vegetable fibers.		36
			40
516.71–94	Mica products		
531.37	Porcelain refractory articles		12.5–40
531.71	Refractory chrome bricks		45
532.21–31	Ceramic tiles, etc.		25
533.23–77	Earthenware, china, etc.		25
534.41–47	Other housewares, etc., of china, porcelain, earthenware, etc.		20–60
			25–45
535.21–31	Laboratory and industrial ceramic ware, sanitary ware, plumbing fixtures.		20–60
536.11–15	Other ceramic ware, etc.		
540–548	Glass and articles manufactured of glass		20–45
350.00–10	Netting, veiling, and lace		0–82
357.70	Textile edges, fringes, trimmings, etc.		19–65
702.60	Wool felt hats, not stamped, blocked, trimmed, etc.	25 cents per pound plus 55 percent.	42.5
			70
365.20–85	Machine-made lace furnishing		25–65
386.05			
365.95	Coir pile matting and mats (coconut fiber)	10 cents per square foot	50.3
642.25–78	Wires and wire cloth		21–50
644.15–60	Metal foil and leaf		23.2–75
646.80–89	Padlocks and cabinet locks		18–30
649.71–91	Pen and pocket knives		22–60
652.72	Picture frames, mirrors, etc., coated with precious metal.		40
653.60–75	Household and other articles, made of or coated with precious metal.		20–50
680.47–48	Variable ratio speed changers and parts		
682.20	Synchronous motors under 1/20 horsepower		45
682.55	and parts.		50
683.70	Flashlights and parts		
684.50	Flatirons except travel irons		35
704.05–705.86	Gloves		34
708.00–60	Handbags and flatgoods of vegetable fibers, textiles, metals, etc.		20–60
			17–44
708.52	Prism binoculars		
708.71–75	Compound optical microscopes		30
709.01	Medical, dental, surgical, etc., instruments, reflecting and optical.		25–45
			45
709.13	Syringes, hypodermics, etc.		
709.23	Needles, except dental hypodermic		42.5
710.06	Rangefinders		32
710.26	Anemometers		45
710.67–70	Folding rules		35+
711.04–713.19	Measuring, testing and controlling instruments.		20–26
			20–50(85)
715.05–721.12	Watches, clocks, etc.		
722.40–46	Still, silent and combination projectors		20–50+
722.55	Viewers, splicers, titlers, etc.		35
727.47	Furniture of laminated or reinforced plastic		45
730.15–19	Pistols and revolvers		30
730.23–29	Rifles		22.5+
730.37–59	Shotguns and combination shotguns and rifles.		40
			30
730.80	Blank pistols		
730.85	Air rifles		42
731.15	Fishing rods and parts		35
731.20–22	Fishing reels		50
732.02–36	Bicycles and parts		14+40.5
732.40	Doll carriages, strollers, and parts		20–30
737.20–50	Dolls, toy figures of animate objects (with and without motors)		35
			22–44
737.80–90	Toys and parts, NSPF [1]		
740.05–80	Jewelry of precious metals, stones, pearls, etc.		35–44
741.10	Imitation pearls, etc., not strung or set		20–55
741.40	Metal rondelles for the manufacture of jewelry		40
745.10	Metal buttons, not embossed, value over 20 cents per dozen.		40
			55
745.20	Pearl or shell buttons (Philippine article)	1.75 cents per gallon plus 25 percent.	
745.40	Button blanks, molds, and parts of buttons		35
745.45	Metal buckles and buckle slides, valued over 20 cents per dozen.		55
745.50	Safety pins, hair pins, etc., coated with precious metal.		50
745.63–67	Snaps, clasps, fasteners, etc.		27.5–55
745.70–74	Zippers and parts		40–50
748.20–21	Artificial fruits, flowers, etc.		28–42.5

[1] Not specially provided for elsewhere in tariff schedule.

TABLE 3.—*High tariff items for potential development*—Continued

U.S. Tariff Schedule No.	Description	Tariff rates	
		Stated	Ad valorem percent
750. 22	Barrettes, etc., except combs, not plain rubber or plastic.		55
756. 02–15	Cigarette lighters and parts		20–50
760. 05 760. 10	Fountain and ballpoint pens and mechanical pencils.		27+–32+
772. 06	Plates, bowls, cups, saucers, etc., of rubber or plastic.		40
790. 05	Clothespins, spring type		55. 8
790. 50–63	Vacuum bottles and parts		40+
605. 03–47	Unwrought and semimanufactured platinum, gold and silver.		24–50
750–40	Toothbrushes		40. 5
112. 30	Tuna, canned, no oil, not over 20 percent of preceding year's pack, cont. 15 pounds.		12. 5
112. 34	Tuna, canned, no oil, over 20 percent of preceding year's pack, cont. 15 pounds.		25
112. 90	Tuna, canned, in oil		35
113. 56	Tuna in containers over 15 pounds each, not in oil.	1 cent per pound	3
114. 20	Crabmeat, canned		22. 5
145. 08	Coconut meat, shredded and desiccated or similarly prepared.	1.75 cents per pound	14
168. 10	Arrack	$2 per gallon	27
170. 70	Cigars and cheroots (except Philippine article).	$1.91 per pound plus 11.5 percent.	350(?)
176. 04–13	Coconut oil (Philippine and TT preference)	3–6 cents per pound	30
175. 09–12	Copra (Philippine and TT preference)	1.87 cents per pound	27
176. 18	Cottonseed oil	3 cents per pound	(?)
176. 38	Peanut oil	4 cents per pound	(?)
176. 52	Soybean oil	45 percent	(?)
176. 22	Hempseed oil	6 cents per pound	(?)
178. 10	Hydrogenated oils, etc	5 cents per pound	18
345. 10	Knitted fabrics, vegetable fibers	37.5 cents per pound plus 20 percent.	30
345. 30	Knitted fabrics, wool		31
345. 35	Knitted fabrics, silk	25 cents per pound plus 20 percent.	27. 5
345. 50	Knitted fabrics, manmade fibers	30 cents per pound plus 15 percent.	22–37
307. 64	Other wool yarns (not for carpets)	25 cents per pound plus 30 percent.	25–36
310. 60	Other manmade fiber yarns	37.5 cents per pound plus 20 to 30 percent	50
367. 05 367. 10	Wool knit furnishings	25 cents per pound plus 32.5 percent.	(?)
367. 50	Manmade fiber knit furnishings	42.5 percent	61. 5
372. 05 372. 10	Mufflers, scarves, and shawls, lace or net	37.5 cents per pound plus 20 to 30 percent.	42. 5
372. 30 372. 35	Mufflers, scarves, and shawls, wool knit	25 cents per pound plus 32.5 percent.	24–41
372. 70	Mufflers, scarves, and shawls, manmade fiber, knit		40
373. 05	Neckties, ornamented	37.5 cents per pound plus 21 percent.	42. 5
373. 15	Wool neckties, not ornamented	25 cents per pound plus 27.5–32.5 percent.	25
373. 25 373. 27	Manmade fiber neckties, not ornamented		33
374. 15	Hosiery, cotton, not embroidered, ornamented		42. 5
374. 30	Hosiery, wool, not embroidered, ornamented		42. 5
374. 40	Other cotton hosiery, not ornamented, knit	37.5 cents per pound plus 20 percent.	43
374. 50	Other wool hosiery, not ornamented, knit	25 cents per pound plus 35 percent.	29
374. 60	Other manmade fiber hosiery, not ornamented, knit	37.5 cents per pound plus 30 percent.	39
380. 57	Men's and boys' clothing, not net or lace, not ornamented, wool knit, $5 per pound.	37.5 cents per pound plus 20 percent.	37+
380. 60	Men's and boys' clothing, not net or lace, not ornamented, wool knit, $5 per pound.	25 cents per pound plus 27.5–32.5 percent.	22–27
380. 81 380. 84	Men's and boys' clothing, not net or lace, not ornamented, manmade fiber.	37.5 cents per pound plus 20 to 32 percent.	32–69
382. 48–57	Women's, girls' or infants' clothing, not net or lace, not ornamented, wool, knit.	25 cents per pound plus 27.5 to 32.5 percent.	28–45
382. 78–81	Women's, girls' or infants' clothing, not net or lace, not ornamented, manmade fiber.		29–68
725. 06	Stringed musical instruments without keyboards		34

(?) No 1963 imports from which to determine value.

Source: Tariff Schedules of the United States Annotated.

In addition, the proportion of total value represented by foreign parts was carefully studied. If this proportion is relatively low—say, 20 percent—even a 40 percent savings on their cost will produce only an 8 percent margin. If, however, the value of dutiable foreign materials approaches 50 percent, a 30-percent price advantage on these parts will give rise to a margin of 15 percent in the finished article. Many prospective Guam products were eliminated on the basis of this proportion being unfavorable.

Finally, mere assembly of completely finished imported foreign parts is not sufficient to qualify an item as being truly a product of Guam. There must be some actual manufacture on Guam for the product to enter the United States duty free. Determination of whether any given article is, in fact, a true product of a territory is made by the U.S. Customs Bureau. Obtaining a prior decision from Customs regarding a specific product (or, for that matter, a general set of guidelines) is very difficult. Apparently, Customs wants to see the article as it was manufactured in the territory prior to making a decision as to its status under section 301. Potential manufacturers will be understandably reluctant to make substantial investments in materials and plant facilities without some assurance that their product will qualify for customs exemption if it is produced under agreed-upon methods. It should be made clear that the export industries discussed here would not, under ordinary circumstances, set up operations in Guam (or in other U.S. territories) and then happily find themselves in a duty-exempt position. They will establish operations specifically to take advantage of opportunities to avoid duty while utilizing foreign materials as well as to avail themselves of other economic incentives offered by the government of Guam.

Where sufficiently detailed data were obtainable on favorable industries, pro forma statements of investment requirements and first year's operations have been constructed. Where sufficient data were unobtainable, the analyses were necessarily restricted to a discussion based on available information. In the case of the former, investments for capital goods are based on U.S. prices and include a 33-percent allowance for installation and freight. No attempt was made to reflect possible savings in these prices by obtaining Japanese equipment. The primary reason for lack of data in the case of the latter class of products is that they tend to vary widely on an item-by-item basis (e.g., bicycles come in a bewildering variety of sizes, styles and prices, whereas canned tuna fish represents only four basic products). Also, the manufacture of consumer goods is highly competitive, with virtually no published research concerning operating costs, investments and the like. With tuna fish and agricultural products (e.g., broilers, mixed feeds, etc.), however, these have been the subject of extensive research by government agencies and universities. As a result, a great deal of information concerning manufactured goods is subjective because it is based on the opinions and "best knowledge" of individuals familiar with a particular product; and some of the information concerning agricultural enterprises is based on public research data.

A. Manufacturing (Raw Material Based)

1. TUNA CANNERY

A Guam tuna cannery could be a completely integrated plant capable of processing 50 tons of tuna per 8-hour shift, an annual output slightly in excess of half a million cases of canned tuna. Its market would be the United States. Since this market is very brand conscious, the cannery's products would have to be marketed under a known brand label. A portion of the production might also be sold locally. In 1964, nearly half a million pounds of fish and fish products were imported for civilian consumption.[3] Some of this amount was certainly canned tuna. In addition to the civilian market, the military population also consumes large amounts of tuna.

The plant would have to be located in the commercial harbor, with dock facilities for unloading incoming fishing boats. These boats could be under contract to the cannery but operated by foreign nationals (such as Koreans, Okinawans, or Taiwanese), or they could be owned by the cannery. Fishing would be primarily for yellowfin, big-eye and albacore utilizing the long-line method in which about six lines 100 to 400 feet in length, each containing a weighted hook and baited with frozen fish or squid, are suspended from a surface line of 1,200 feet. A number of these surface lines, held at each end by a buoy, are joined to form a "long line," which may be up to 50 miles long. Daily, the lines are set out during the morning and hauled up during the afternoon. This method utilizes boats smaller than those typically used in the U.S. fisheries for live-bait fishing (tuna clippers) or purse seining. The long-line method requires long hours of hard work on the part of the crews, and its successful utilization virtually dictates the use of alien labor who will work for low wages under these conditions. Several attempts by a U.S. cannery to train Samoans as long-line fishermen failed; even the Japanese fishing fleet is hard pressed to retain its workers in the face of competition from industry.

Annually, the boats would make eight 1-month voyages, delivering about 50 tons of fish per trip. A fleet of approximately 32 such boats would be required to keep the cannery supplied with tuna. Albacore are not abundant near Guam but are available east of Japan from October to April and northeast of Australia throughout most of the year. Big-eye tuna are available year-round in a band just north of the Equator, beginning immediately south of Guam and extending 2,000 to 3,000 miles eastward, the greatest concentration occurring in the vicinity of the international date line. Abundant yellowfin may be found throughout the year (although in somewhat smaller quantities from August to October) between Guam and New Guinea. On the basis of distance and seasonal availability, yellowfin will provide the bulk of the catch. This variety yields a high quality light meat tuna which may be canned in either the solid or chunk style. The long-line method has proved the best method for catching these fish on a year-round basis in the Western Pacific.[4]

When the boats return to the harbor, they are unloaded and the fish frozen as necessary to maintain a relatively constant supply of

[3] "U.S. Trade with Puerto Rico and the U.S. Possessions," FT 800, 1964 annual, Bureau of the Census, U.S. Department of Commerce.
[4] Nankai Regional Fisheries Research Laboratory, Average Year's Fishing Condition of Tuna Long-Line Fisheries (Appendix Atlas), Federation of Japan Tuna Fishermen's Cooperative Associations, July 1959.

fish to the cannery lines. The cannery process begins with either thawed fish from frozen storage or chilled fish from the boats. The fish are eviscerated and washed and then precooked in steam for 2 to 9 hours. Following the precooking, the head, skin, and bones are removed and the remaining meat separated into the four longitudinal muscles (loins). The loins are then sliced into sections to fit the cans for "solid pack," with the smaller pieces being used for "chunk pack." After the cans have been filled with meat, soybean oil and salt are added. The cans are then sealed, washed and sterilized in high-pressure steam for 1 to 4 hours. The cans are labeled and packed in cases after cooling.

The fish offal (viscera, bones, skin, etc.) is further processed by heat and pressure in the reduction apparatus. The resultant by-products, fish oil and fish meal, could be sold. The feed mill (described elsewhere within this study) could utilize the fish meal in the production of poultry feed. Fish oil is used in the manufacture of products such as fertilizer and paint.

a. Investment requirements

The packing plant requires a capital investment of approximately $1.5 million. A breakdown of this total by major category is shown in table 4. The can manufacturing equipment is used to deep draw one-piece cans from round blanks stamped from strip stock. This method costs 30 percent less than the present practice of overseas tuna plants of reshaping round cans which have been flattened for shipment after manufacture. In addition to the cannery itself, a substantial investment will be required to finance the fishing fleet.[5] Working capital for one month's expenses has also been provided. The costs of docks and similar facilities for the fishing fleet are not included.

b. Personnel requirements

A total of 347 people would be employed by the cannery, of whom 262 are unskilled, 40 are semiskilled and 28 are skilled. The number of plant workers required for each function is shown in table 5. "Cleaners" and "packers" are typically women, and women could be utilized in some other functional positions as well. Most of the workers will be unskilled; and where higher skill levels are required, the effort and time required to obtain the necessary skills often are not great. A manager, foreman and several skilled workers should be able to sufficiently train the majority of workers to allow substantial plant production within two weeks. Full production should be reached in no more than four weeks.

[5] To the extent that lease or contract arrangements can be made with foreign boat owners, less capital will be required to initiate operations. Sources in the tuna industry indicated that the current shortage of fishing boats and the absolute requirement for steady supply would probably require fleet financing.

TABLE 4.—*Tuna canning—Plant and equipment*

Input (per 8-hour shift):	
50 tons of raw tuna.	
40 tons total offal reduction capacity.	
30 tons from tuna operations.	
10 tons from "trash fish," etc.	
Output (per 8-hour shift):	
2,150 cases of canned tuna (average).	
4 tons of dried fish meal.	
2,800 pounds of fish oil.	
Investment:	
Land (2 acres at Commercial Port)	$10, 000
Building (40,000 square feet)	200, 000
Equipment (including installation):	
Tuna processing and canning equipment (including conveyors, tables, cookers, can sealers, retorts, packers)	400, 000
Ancillary equipment (including storage tanks, piping, boiler, electric power, refrigeration, etc.)	420, 000
Offal reduction plant	115, 000
Can manufacturing equipment	370, 000
Total fixed capital	1, 515, 000
Working capital (1 month's expenses)	514, 000
Fleet financing (32 boats at $250,000)	8, 000, 000
Total investment required	10, 029, 000

Source: Roy C. Heacock and D. E. Miles, Standard Steel Corp., Los Angeles, Calif.

TABLE 5.—*Tuna canning—Personnel*

	Unskilled	Semiskilled	Skilled
Direct labor:			
Butchers			
Cleaners (women)			15
Packers (women)	200		
Other tuna processors (inspectors, cooks, movers, canners, etc.)		12	
Meal plant	40	20	10
Warehouse	2		1
Refrigeration and icemaking	12	3	
Canmaking	2	3	2
	6	2	
Total direct labor (330)	262	40	28
Indirect labor:			
Manager			1
Foremen			4
Maintenance mechanics			3
Office			4
Other (nurse, chemist, timekeeper, etc.)			5
Total indirect labor			17
Total personnel required, 347			

Source: Roy C. Heacock and D. E. Miles, Standard Steel Corp., Los Angeles, Calif.

c. Operating costs and sales revenues

A pro forma operating statement is shown as table 6. All labor rates include allowance for fringe benefits and payroll taxes. The cost of raw tuna, about 20 percent below the ex-vessel price at U.S. ports, was based on projected average world prices. Although raw fish is the largest single cost item, the cannery could still make a small profit if the price of raw tuna increased by as much as $50 per ton while the selling price of canned tuna remained fixed. The cost of materials for cans is based on current U.S. data and might be reduced somewhat if Japanese metal were used. Included in the

estimated revenues are the proceeds from the sale of byproducts, at least some of which may be sold for use on Guam. (The initial production of a feed mill would utilize about 200 tons of fish meal annually.) Figures on profit and rate of return do not reflect any interest revenue that may arise from the financing of the fishing fleet.

d. Problems and other considerations

The main problem that might be encountered by the tuna cannery is the possibility of Navy closing of the harbor for security reasons at some time in the future. Also, the exact location of the cannery would have to be carefully determined in order to minimize the effect of its odor on neighboring activities.

The ability of a plant to compete in the U.S. market is dependent upon section 301 of the Tariff Regulations. Although the 50 percent rule poses no problems since raw tuna is not a dutiable foreign material, Guam is outside the customs territory of the United States. Without the protection of section 301, however, the canned tuna would be subject to full duty upon entry into the United States. Therefore, the existence of section 301 or some similar provision is essential to a continuing, profitable cannery operation.

As previously mentioned, the total investment shown in table 4 does not include docking facilities. Also excluded are harbor facilities such as drydocks, moorings, repair yards, and fuel and supply docks. No housing would be required for the crews since they can sleep on their boats, but it may be necessary to provide recreational facilities ashore.

TABLE 6.—*Tuna canning—Annual operating costs and revenue*

[Expense]

Labor:	
Direct:	
Skilled (28 at $4,800)	$134,000
Semiskilled (40 at $3,600)	144,000
Unskilled (262 at $3,000)	786,000
Total direct labor	1,064,000
Indirect:	
Manager	14,000
Foremen (4 at $6,400)	26,000
Maintenance mechanics (3 at $4,800)	14,000
Office (4 at $3,400)	14,000
Other (5 at $3,400)	17,000
Total indirect labor	85,000
Total labor	1,149,000
Materials:	
Direct:	
Tuna fish (12,500 tons at $225 average) [1]	2,813,000
Salt (71 tons at $80) [2]	6,000
Soybean oil (1,210 tons at $320) [3]	387,000
Cans (material and royalties) [4]	356,000
Cases (537,500 at 15 cents) [5]	81,000
Total direct materials	3,643,000
Indirect (hand tools, repair parts, office supplies, etc.) [6]	40,000
Total materials	3,683,000

See footnotes at end of table, p. 65.

TABLE 6.—*Tuna canning—Annual operating costs and revenue*—Continued

Fuel, water, and power:	
Electric power (1.5 million kilowatt-hours at 2 cents) [4]	$30,000
Fuel oil (120,000 gallons at 10 cents) [4]	12,000
Water (25 million gallons at 50 cents per 1,000 gallons)[4]	13,000
Total fuel, water, and power	55,000
Depreciation:	
Building (20 years)	10,000
Equipment (10 years)	131,000
Total depreciation	141,000
Other expenses:	
Selling and miscellaneous expense [5]	806,000
Royalties for Pak-former and Pak-shaper [6]	62,000
Freight (Guam to United States) [7]	538,000
Total other expenses	1,406,000
Total expenses	6,434,000
Revenue:	
Tuna (537,500 cases at $13.50) [8]	7,256,000
Fish meal (1,000 tons at $175) [9]	175,000
Fish oil (700,000 pounds at 10 cents) [10]	70,000
Total revenue	7,501,000
Profit on sales	1,067,000
Provision for Federal income taxes	506,000
Net profit	561,000
	Percent
Margin on sales (pretax)	14.2
Return on total investment (after tax)	5.6
Return on fixed capital (after tax)	37.0

[1] Japanese (world) price for yellowfin averaged 20 percent less than U.S. price from 1952–57 (A. W. Anderson, W. H. Stolting & Associates, Survey of the Domestic Tuna Industry). The 1964 U.S. price for yellowfin was $270 per ton (Pacific Fisherman magazine). This gives a 1964 world price of $216 per ton which was adjusted to $225 per ton to provide for price fluctuations.

[2] Estimated from "Canned Tuna Fish: S.I.C. 2091" (plus freight).

[3] "Fats and Oils Situation," FOS-228 (plus freight).

[4] Roy C. Hancock and D. E. Miles, Standard Steel Corp., Los Angeles, Calif.

[5] Estimated at $1.50 per case (U.S. Tariff Commission, Tuna Fish).

[6] A. W. Anderson, W. H. Stolting & Associates, Survey of the Domestic Tuna Industry.

[7] Estimated at $1 per case. Freight is $3.03 per hundredweight (PFEL), and canned tuna weighs 32 pounds per case.

[8] Current wholesale price of advertised brand label chunk light tuna, Bureau of Commercial Fisheries, San Pedro, Calif.

[9] Animal Husbandry Research Division, Agricultural Research Service, U.S. Department of Agriculture.

[10] "Fats and Oils Situation," FOS-228.

Permission from the Navy might also be required so that the foreign-flag fishing vessels carrying alien crews can come into port. However, 46 U.S.C. 251, which prohibits foreign-flag fishing vessels from delivering their catch of fish to a U.S. port, does not apply to Guam.

Although the probable investor in such a venture would most likely be a U.S. tuna cannery in view of brand label marketing considerations, other investors are not necessarily precluded. Other marketing methods, such as producing a private label brand for a large chain retailer or selling through brokers to smaller private label brand retailers, are possible. However, substantial adjustments in the operation as shown here would have to be made since the current wholesale price of canned tuna is approximately $4 per case lower for private label brands than for nationally advertised brands.

c. Conclusions

A tuna cannery would be both a profitable investment and a major source of employment. Although the capital requirements are substantial, they are not prohibitive, and establishment of this industry on Guam should be encouraged.

References

1. U.S. Tariff Commission, "Tuna Fish," report on investigation conducted pursuant to a resolution of the Committee on Finance of the U.S. Senate, dated August 20, 1957. Washington, D.C., 1958.
2. Thomas A. Petit, "The Economics of the Southern California Tuna Industry," University of California, Los Angeles, 1959.
3. A. W. Anderson, W. H. Stolting & Associates, "Survey of the Domestic Tuna Industry," special scientific report, fisheries No. 104, Fish and Wildlife Service, U.S. Department of the Interior, Washington, D.C., 1953.
4. Pacific Fisherman magazine, yearbook number, January 25, 1965.
5. Nankai Regional Fisheries Research Laboratory, Average Year's Fishing Condition of Tuna Long-Line Fisheries (Appendix Atlas), Federation of Japan, Tuna Fishermen's Cooperative Associations, July 1959.
6. Roy C. Heacock, Vice President and Director of Research and Development, and D. E. Miles, Engineer, Standard Steel Corporation, Los Angeles, California.
7. Robert K. Pederson, Vice President-Operations, Star-Kist Foods, Inc., Terminal Island, California.
8. John Marr, Brian Rothschild and Tamio Otsu, Bureau of Commercial Fisheries, Honolulu, Hawaii.
9. "Hawaiian Fisheries—An Industry in Crisis," Bureau of Commercial Fisheries, Fish and Wildlife Service, U.S. Department of the Interior.
10. "Canned Tuna Fish: S.I.C. 2031," Industry Fact Sheets, Agency for International Development, U.S. Department of State.
11. "Fats and Oils Situation," FOS-228, Economic Research Service, U.S. Department of Agriculture, May 1965.

2. COCONUT PRODUCTS

After considerable study, copra products were judged to be infeasible manufactures for Guam. Transportation disadvantages would obtain even if the trust territory were to become a reliable supplier. Furthermore, the costs of transporting the final products to the United States exceed those between the United States and the Philippines, the latter being a major exporter of coconut oil. The cost of the copra would substantially exceed 50 percent of the value of the coconut oil output, and the trust territory (for purposes of customs duties) is considered to be foreign.

3. CERAMIC ARTICLES

The manufacture of ceramics on Guam is not practicable for several reasons. First, it is unlikely that the Guam manufacturing cost would be less than that in the United States. This, coupled with the

high freight cost of transporting the finished product, makes such a venture definitely unprofitable. Furthermore, even with the high tariffs associated with such items, foreign manufacturers have captured most of the U.S. market in chinaware. The possibility of a ceramics operation for import replacement is also not promising, since the supply of raw materials would be too far removed from a plant on Guam.

B. Manufacturing (Imported Components)

1. WATCHES AND OTHER HOROLOGICAL DEVICES

Watches, clocks, timers, time switches—virtually any product involving the measurement of time—are subject to exceptionally high U.S. import duties, in most cases not less than 40 percent effective ad valorem and in some the duties approach 100 percent. Watches are now being assembled on Guam and qualify for duty-free import under section 301. However, a bill recently passed by the House of Representatives (H.R. 8436) prohibits the establishment of assembly operations for any horological devices in any other U.S. territory or possession.

In addition to watches, all types of clocks, kitchen timers and the like would be good prospects for manufacture on Guam from Japanese parts and subassemblies. If the effort to defeat H.R. 8436 is unsuccessful, an attempt should be made to amend the law so that it will apply only to the assembly of watches, thereby enabling Guam to develop an industry for the assembly of clocks, timers, etc.

References

1. Osamu Yoshikawa, Foreign Department, Citizen Watch Co., Ltd., Tokyo.
2. "The Japanese Watch and Clock Industry," Overseas Business Reports, OBR 65–25, Business and Defense Services Administration, U.S. Department of Commerce, May 1965.
3. "Watch Movements," U.S. Tariff Commission report, 1963.
4. "Watch Movement—to West Indies," Business Week, June 5, 1965, p. 132ff.

2. TEXTILE PRODUCTS

The production of knitted fabrics and clothing from woolen, synthetic and blended yarns is a particularly promising manufacturing operation for Guam. Yarns can be purchased at prices that will permit the Guam product to compete in the United States and apparently satisfy the 50-percent requirement. The price of Japanese dyed woolen yarns, for example, is about 50 percent lower than the U.S. price. Capital and labor requirements of a knitting factory are also favorable to manufacture on Guam. A plant that can turn out 10,000 pounds of fabric per week can be established on an investment of about $300,000, excluding land. Approximately 15 employees would be needed to run this factory on a 2-shift basis, using about 12 machines. Based on Japanese conditions, a somewhat larger plant, using 20 to 30 machines and 40 to 50 employees, could be managed by one man. The International Wool Secretariat reports that it can give technical assistance to the development of a Guam knitting in-

dustry by arranging on-the-job training for Guamanian workers in Japanese plants and paying the cost of their domestic accommodations and travel. Japanese firms would probably cooperate in a joint venture.

Using high-grade yarns, it might be necessary in some cases to cut and sew the knitted fabric into garments in order to meet the 50-percent rule. With lower grade yarns, the latter step would not be necessary, although it might be desirable in any case.

Textile weaving does not appear to be a feasible industry for Guam because of the very large scale of plant required and because wage rates would have to be considerably below the minimum legal wage to support a feasible operation. Manufacture of apparel from imported cotton, wool and synthetic textiles might well offer a number of opportunities for feasible enterprises, however. Gloves, neckties, dresses, shirts and other clothing and furnishings are among the possibilities.

3. FISHING RODS AND REELS

Fishing rods and reels and their constituent parts incur high rates of duty (e.g., fishing reels valued at not over $2.70 each pay duty at 46.5 percent ad valorem). The presently employed method of final assembly of fishing reels from imported subassemblies would not satisfy the 50-percent rule of section 301. Adjustments would have to be made so that not only would complete assembly of all parts be done on Guam, but the manufacture of some of these parts (e.g., die-casting, anodizing, painting, etc.) would also be done there in order to keep the cost of foreign parts within the 50 percent allowed.

A plant with an annual volume of $1,500,000 would require a building of 12,500 square feet—5,000 square feet for assembly and 7,500 square feet for storage. In addition to the building (with electric wiring, shelving, bins, etc.), about $5,000 would be required for benches, hand tools, jigs, and fixtures. An additional $2,500 would be required for an air compressor and a conveyor. The indicated level of investment does not include the cost of diecasting or other equipment that might be needed to manufacture some of the parts on Guam.

A staff of 25 to 30 people would be required. The majority of the labor would be women, and training to the requisite semiskilled level would take about one month for the assembly workers. Fishing rods are apparently a better product in terms of meeting section 301 requirements, but somewhat higher skill levels are involved in their assembly.

Although the elimination of import duties would be attractive to a manufacturer, possible avoidance of the 10 percent manufacturer's Federal excise tax on the finished product would provide additional incentive.[6] The payment of any such taxes into the Guam Treasury is provided for by section 30 of the Organic Act. It appears that if a means for returning this tax to the Guam manufacturer were provided, a sufficiently strong incentive for locating there could result.

[6] Fishing gear is one of a very few products on which the excise tax was not removed by recent Federal legislation.

4. TENNIS SHOES

The current level of U.S. import duty on tennis shoes is subject to a degree of uncertainty. The Tariff Schedule of the United States (TSUS) indicates an ad valorem duty of 20 percent on item No. 700.60:

> Footwear (whether or not described elsewhere) which is over 50 percent by weight of rubber or plastics or over 50 percent of fibers and rubber or plastics with at least 10 percent by weight being rubber or plastics, not having uppers of which over 90 percent of the exterior surface area is rubber or plastics.

Although various unofficial sources have indicated that this rate of duty has recently been or very shortly will be substantially increased to approximately three times the present level, local (Los Angeles) customs officials have had no notice of it. Because of the interest shown by potential investors, tennis shoes were retained for further study.

Canvas uppers, which represent 80 percent of the total labor in manufacturing tennis shoes, could be fabricated in Taiwan and shipped to Guam. There the soles would be molded and vulcanized to the uppers and, after the addition of cushion innersoles, packed for shipment to the United States. The estimated investment required for the Guam vulcanizing plant is shown in table 7. Table 8 gives annual operating costs and revenues.

The operating costs and revenue as shown indicate that raw materials comprise nearly 57 percent of selling price, and this proportion will probably actually be higher when freight to Guam is included. Consequently, some adjustments will have to be made in the method of operation to keep material costs within the 50-percent limit of section 301 in order to ensure duty-free entry into the United States.

Although the profitability ratios shown are probably overstated, the inclusion of freight charges should not reduce them below attractive levels. In addition to being a profitable enterprise, the assembly of tennis shoes would be a substantial source of employment for Guam; its total requirements call for a staff of 95, most of whom would be local labor.

TABLE 7.—*Tennis shoes: Plant and equipment*

Capacity: 180,000 dozen pairs	
Investment:	
Land (1 acre—estimated)	$5,000
Building (14,000 square feet)	70,000
Equipment:	
Direct manufacturing equipment (including automatic vulcanizing presses, shoe molds, rubber mixing rolls, punching cutter and dies)	122,000
Ancillary equipment (including air compressor, packing equipment, water and electricity supplies, miscellaneous equipment, and installation costs)	33,000
Total fixed capital	230,000
Working capital (3 months' expenses and start-up costs)	254,000
Total investment	484,000

TABLE 8.—*Tennis shoes—Annual operating costs and revenue*

	[Expenses]
Labor:	
Direct:	
Automatic press operator (6 at $3,000)	$18,000
Small press operator (30 at $3,000) [1]	90,000
Mixing roll operator (12 at $3,000) [1]	36,000
Punching cut operator (6 at $3,000) [1]	18,000
Mixing roll assistant operator (3 at $3,000) [1]	9,000
Trimming and packing (24 at $3,000) [1]	72,000
Total direct labor (81)	243,000
Indirect:	
Manager (1 at $6,000)	6,000
Production manager (1 at $5,400)	5,000
Chemist (1 at $4,800)	5,000
Engineer (1 at $4,800)	5,000
Machinist (1 at $3,600)	4,000
Electrician (1 at $3,600)	4,000
Secretary (1 at $4,800)	5,000
Clerk (2 at $4,800)	10,000
Warehouse keeper (2 at $3,600)	7,000
Driver (1 at $3,000) [1]	3,000
Other (2 at $3,000) [1]	6,000
Total indirect labor (14)	60,000
Total labor (95)	303,000
Materials:	
Direct:	
Soling material, rubber (600 metric tons at $500)	300,000
Shoe uppers:	
Men's (60,000 dozen at $3)	180,000
Women's and children's (120,000 dozen at $2.40)	288,000
Cushion material:	
Men's (60,000 dozen at 60 cents)	36,000
Women's and children's (120,000 dozen at 35 cents)	42,000
Packing materials (180,000 dozen at 50 cents)	90,000
Total materials	936,000
Electricity (669,000 kilowatt-hours at 2 cents)	13,000
Depreciation:	
Building (20 years)	4,000
Equipment (10 years)	16,000
Total depreciation	20,000
Office expenses and miscellaneous	24,000
Total expenses	1,296,000
Revenue:	
60,000 dozen men's shoes at $12.50	750,000
120,000 dozen women's and children's shoes at $7.50	900,000
Total revenue	1,650,000
Profit on sales	354,000
Provision for Federal income taxes	163,000
Net profit	191,000
	Percent
Margin on sales (pretax)	21.5
Return on total investment (after tax)	39.5
Return on fixed capital (after tax)	83.0

[1] Original data adjusted to reflect minimum wage ($1.25 per hour); annual cost including social security and minimum fringe benefits, $3,000.

5. PHOTOGRAPHIC AND OPTICAL PRODUCTS

Many of the products which fall within this general category (e.g., cameras) are not subject to particularly high rates of duty. Those which offer a substantial tariff advantage are shown in table 9. Unfortunately, few data were obtainable concerning operating costs for products in this category from U.S. producers who utilize foreign parts.

Japanese manufacturers indicated that most products in this area were not feasible for Guam assembly and subsequent duty-free entry into the United States under section 301. Typically, the 50-percent rule could not be met because assembly and packing costs were estimated on the order of 10 percent, with a maximum in a few cases of 30 percent. The high skill levels required and the long, difficult training necessary to reach them were cited as further drawbacks. Guam's climate was considered a definite handicap since the salt air and humidity would require high outlays for total air conditioning of both assembly and storage areas.

An additional problem, at least in the case of prism binoculars and probably in the case of some of the other products in this group as well, is the present success of Japanese producers in selling their merchandise in the U.S. market. There is apparently insufficient incentive, in view of the high levels of investment required, to induce Japanese firms to locate in Guam. This not only reduces the list of potential investors for Guam but also virtually eliminates the source of supply of parts for a Guam operation. Some Japanese manufacturers implied that they are not favorably disposed to selling parts for Guam assembly as they would, in effect, be competing with themselves.

One Japanese respondent did feel, however, that Guam assembly of low-grade cameras might satisfy the 50-percent rule. Investment would be about half a million dollars, and employment would be about 200. For a product of this quality, labor skills, humidity and salt air would pose no problems. Unfortunately, however, the specific product this respondent had in mind was an 8-millimeter movie camera costing $20 to $30. The U.S. import duty on this product is only 15 percent, probably not high enough to compensate for Guam's higher labor and transportation cost.

TABLE 9.—*Photographic and optical products*

[U.S. import duty—Percent]

	Percent
Rangefinders (photographic)	25
Still, silent and combination silent and sound projectors	45
Viewers, titlers and splicers (with lens)	45
Rangefinders (except surveying or photographic)	45
Photogrammatical instruments	28
Comparators	45
Compound optical microscopes	25–45
Binoculars (prism type only)	30

Lower grade still cameras have duties of 15 to 25 percent, with the higher rate applying only to those cameras in which the lens represents over half of their total value.

Recently a U.S. manufacturer has expressed an active interest in the possibility of assembling projectors and editors on Guam. Based

on his own preliminary analyses, his operations would meet Section 301 requirements. The tax rebate provisions of GEDA provided an equal if not greater incentive than the tariff exemption. Whether or not this manufacturer actually establishes an operation on Guam, his interest brings out an important point. The several products discussed here were considered on the basis of the criteria outlined earlier (initial high tariffs, sec. 301 provisions, shipping rates, etc.). Of necessity, the approach taken for each product was for the general case. It may happen in the individual case that an entrepreneur may be able to overcome some of the obstacles found to be present in operations we have found to be marginal. The manufacturer noted above apparently can obtain photographic parts from Japan based upon a long standing relationship with the supplier, even though we were informed that this would prove difficult.

References

1. Keiichi Yokobori, Financial Cooperation Section, Ministry of International Trade and Industry (MITI), Tokyo.
2. Fujiya Yamagata, Trade Information Service Section, Japanese External Trade Organization (JETRO), Tokyo.
3. Hiroya Dohmyo, Assistant Chief, Third Export Division, Nippon Kogaky, K.K., Tokyo.
4. K. Yatomi, Chief, Foreign Department, Japan Camera Industry Association, Tokyo.

6. PLASTICS

There are two possible markets for a Guam plastics molder—the local market and the U.S. market. In order for a Guam molder to compete successfully in the U.S. market, the finished product would have to meet the requirements of section 301. Also, plastic molding powders would have to be available from a foreign source (such as Japan) at a price substantially below the U.S. price in order to overcome the freight disadvantage inherent to Guam's location. Available price information indicates that most plastic materials actually cost more in Japan than in the United States, although a few materials (polycarbonate, nylon 6 and methyl methacrylate) are currently priced lower. This price difference, however, does not appear sufficient to offset the freight costs from Guam. The lack of a substantial price advantage, coupled with the intense competition in the U.S. in molded plastics, indicates that a Guam producer would be unable to compete with domestic U.S. molders. Although there are relatively high import duties on most plastic articles (25 to 40 percent), many foreign products still are able to compete successfully with U.S. producers. Plastic flowers from Hong Kong, for example, have virtually eliminated the U.S. industry because of the substantial foreign advantage in the hand labor costs of assembling the molded parts.

The outlook for the local market is somewhat brighter. This market may be divided into two parts—immediate and future. The future market depends on the development of other section 301 industries on Guam which are feasible in their own right and which would purchase molded plastic parts for use in the manufacture of their particular product. In this case, the possibility of slightly lower molding powder prices and lower freight for Japanese materials might make it more economical for a local manufacturer to buy plastic parts

molded on Guam than from mainland suppliers. Price competition with Japanese suppliers may be less important in those cases where a manufacturer is having difficulty meeting the 50-percent rule with respect to his product being shipped to the U.S. The Guam parts would add substantially less to the value of foreign materials in the finished product and would, therefore, increase the probability of meeting the 50-percent rule.

The type of plastics industry that might be developed on Guam is that of molding. Generally speaking, a plastic molder buys raw material in the form of molding powders. These are mixed and fed into a molding machine where they are melted and then formed into the desired shape. Two basic types of materials are the thermoplastics and the thermosetting plastics. Thermoplastics undergo a physical change when they are molded; the hardened plastic may be remelted by the application of sufficient heat. Thermosetting plastics undergo a chemical change when they are molded and once solidified cannot be remelted.

Thermoplastic materials have several advantages for the molder since they are generally lower in cost than the thermosets and are easier to work. They are capable of a higher rate of production because, once cooled enough to solidify, they may be ejected from the mold; whereas, the thermosetting materials require a curing period during which they must remain in the mold under proper heat and pressure. Since solid thermoplastics may be remelted, their use occasions virtually no waste because mold flash and other scrap may be ground to powder and reused in the molding machine.

The immediate market for plastic products on Guam is not known since such products are not identified in available data. It is likely that the local market is insufficient to support an injection molding operation which has a very high rate of output. Thermoforming sheet is the method most applicable to smaller markets. This method can produce a wide variety of products from drinking cups and mixing bowls to bath tubs and door frames. Its relatively low investment combined with low volume requirements may make it feasible for the present market.

One type of thermoforming sheet process is known as vacuum forming. In this process, a sheet of thermoplastic is placed over a concave mold and fastened around the edges. After the application of heat has made the sheet sufficiently soft, vacuum is applied to the mold cavity, thereby causing the plastic to conform to it. A minimum size molding shop utilizing this process would purchase its raw materials in the form of thermoplastic sheet from either a United States or Japanese supplier. At such time as the volume of the plant will support two or more forming machines, the plant can extrude its own sheet from the basic molding powders.

a. Investment requirements

A minimum size vacuum forming shop would utilize one forming machine. The dimensional capacity of the machine will depend upon what products are to be made initially. Representative sizes and costs are:

Maximum sheet size (inches):	Cost
30 by 36	$3,500
36 by 48	8,500
48 by 72	15,000

Ancillary equipment (air pressure, materials handling, etc.) will add approximately $5,000 to these costs; therefore, a 48-by-72-inch capacity machine with associated equipment would require a $20,000 investment. Other machines, if added later, could rely to a great extent on the original ancillary equipment, substantially reducing the cost of such equipment for subsequent additions. A further advantage of the vacuum forming method is its relatively low mold costs compared with the high volume types of equipment. (Molds for injection-type machines, which must withstand very high pressures, frequently cost as much as $20,000 per set compared with as little as $1,000 to $4,000 per set for vacuum forming.)

A building containing 3,000 square feet with 600 amperes of electrical service would be an adequate size to house up to three vacuum forming machines and their associated equipment. At $8 per square foot, such a building would cost $24,000. Consequently, a small, one-machine shop with all necessary equipment and room for future expansion could be started with an initial investment of about $45,000 to $50,000. (If a minimum size building for the one-machine shop were used, however, total investment could be reduced by about $15,000.) A fully integrated plant with the three forming machines described above, an extruder for making the thermoplastic sheet for the forming machines from molding powders, a building about the size of that described above, and all necessary ancillary equipment would require an investment of about $150,000. The one-man shop described, however, can produce a wide variety of products—from small drinking cups (molding many at a time) to large products such as bathtubs and doorframes (one at a time).

A new process has recently been developed for the molding of large containers, such as half-gallon disposable plastic milk bottles. This type of product was formerly made by blow moulding the entire container at a rate of 1,300 to 1,500 units per hour on a line costing $130,000 to $150,000. The newer method consists of forming halves of this container (possibly by the vacuum process) and shipping the stacked halves to the user who joins them together at the filling point. A forming line to make the same container at the same rate of output by the newer method requires an investment of approximately $45,000. This might be a possibility for development in conjunction with present or future milk packaging on Guam.

b. Personnel Requirements

The small, one-machine shop would require a staff of only 5 to 7 people. The entrepreneur would manage the shop, purchase materials and supplies, and perform the sales function. One or two operators would be required to tend the molding machine. The skills required are not great; keeping the machine supplied with plastic sheet and removing completed articles to storage are about all that are required since most of the operations (including the trimming of flash from the finished product) are automatic. One or two materials handlers/packers/general helpers would be sufficient; here, too, the skills required are relatively slight and easily learned. The maintenance mechanic must be skilled, however, if he is to be able to service the equipment. Unlike a U.S. location, a staff of servicemen will not be readily available from the equipment maker. A secretary-bookkeeper would complete the staff.

The larger, fully integrated shop would, of course, require a larger staff (as would the small shop if it were operating more than one shift per day). For one-shift operation, the larger shop might require a staff of approximately 15 to 20. In addition to the workers described above, three or four operators would be required for the sheet extruder. A foreman would probably also be required to oversee the shop so that the manager could devote his full time to the business aspects of the operation. Both the foreman and the manager must be highly skilled and experienced in all phases of the plastics molding industry. Training of the workers (except the maintenance mechanic) would not be difficult and could be accomplished in a week or two.

c. Operating costs and sales revenue

Unfortunately, detailed data on this phase of the plastics molding industry are not available. The limited raw materials prices that were obtained indicated that, with respect to U.S. molders, a Guam operation would be at a disadvantage because of the total freight charges which would exceed the very few price advantages of Japanese materials. Because of the intense competition and resultant secrecy in the U.S. industry, operating data were unobtainable. One estimate was given that in the vacuum forming method, the thermoplastic sheet might represent two-thirds of the value of the finished product; if the plant extruded its own sheet, the value of the molding powders might be kept within the 50-percent limitation of section 301. (The proportion of raw material costs to finished product value is higher in most other forming methods than it is in vacuum forming.) There are, however, many types of commonly used materials, and these range in price from 15 cents to $1.50 and more per pound. It would be virtually impossible, even with detailed operating data available, to construct an accurate pro forma operating statement unless the product were described to the last detail with respect to its size, shape, weight, color, type of material, number to be made, etc.

Freight costs present a further obstacle. Plastic products typically are neither dense nor do they have a high unit value. Consequently, even if any products manufactured for export were limited to shapes which could be stacked so as to maximize the number which could be shipped in a unit volume, the freight/value ratio would be prohibitively high.

d. Conclusions

The development of a plastics molding industry on Guam, manufacturing for export to the United States under section 301, does not appear to be feasible in the absence of lower than U.S. cost raw materials and the high unit freight on the finished product. Such an industry might be developed, however, to serve the local (and trust territory) markets. Yet the actual demand for any given specific product would have to be determined locally, since detailed consumption data are presently unavailable. A plant utilizing the vacuum forming process would appear best suited to the local market because a one-machine plant could profitably produce a wide variety of products in relatively small quantities.

References

1. "Plastics in Japan: Growth and Diversity," Modern Plastics, January 1965.
2. "Contemporary Thermoplastics Materials, Property and Price Chart," Plastics World, October 1964.
3. Jack Bronte, President, Paradise Manufacturing Co., Los Angeles, Calif.
4. "Markets for Machinery—Today and Tomorrow," Modern Plastics, March 1965.
5. "Plastics Processing USA—A Profile," Plastics Technology, January 1965.
6. "Plastics," Encyclopedia Americana, vol. 22, 1964.
7. S. Okada, Aff Japan Plastic Industry Association, Tokyo, Japan.
8. Donald Gulden, Plamco, Inc., Gardena, Calif.
9. James Borden, Plastics Division, Union Carbide Corp., Los Angeles, Calif.
10. Robert Sheehan, Dow International, San Francisco, Calif.
11. H. Lee, Polymer Chemicals Division, W. R. Grace & Co., Vernon, Calif.
12. "Thermoformed Plastic Sheet Use Soaring," Journal of Commerce, November 2, 1965.

7. BICYCLES

The assembly of bicycles on Guam from Japanese parts does not appear feasible for two reasons. First, the parts comprise more than half the value of the finished article. Assembly labor is a relatively small part of total cost of lower priced bicycles. An Agency for International Development (AID) fact sheet dealing with bicycle assembly indicates parts at 53 percent of selling price for relatively expensive ($37 each) bikes. This proportion is close enough to the requisite 50 percent that the section 301 requirements could be met either by buying a few parts in the United States or making some parts (e.g., handgrips, pedals, etc.) on Guam. The manufacture of most of the parts, however, involves complex procedures such as forging and tempering and requires very expensive machinery and tooling.

Secondly, the freight on Guam bicycles would be very high. Since bicycles are poor utilizers of space, the effective freight to the United States would be about 17 to 19 cents per pound. Examination of table 10 indicates that, generally speaking, a Guam operation would restrict itself to the lower priced bikes where the import duties are greatest. Although the weights shown in the exhibit are not exact, they are reasonably good estimates. Only in the case of the more expensive bikes will the savings on import duties equal the cost of freight. Similarly, only in this same price area will the margin exceed freight costs. A further problem is likely to occur with respect to paint and chrome. It is unlikely that these operations could be performed on Guam with the required U.S. quality standards.

TABLE 10.—*Bicycles (Tsusa 732.02–26)*

Wheel size (inches) (both wheels)	Value	Weight (pounds)	Duty	Freight [1] (unit)	Margin [2]
Not over 19	Not over $6.25	20 (estimate)	30 percent	$3.40	$0.93
	$6.25 to $8.33		$1.875 each		1.24
	Over $8.33		22.5 percent		
19 to 25	Not over $10	25 (estimate)	30 percent	4.25	1.50
	$10 to $13.33		$3 each		1.99
	Over $13.33		22.5 percent		
Over 25	Not over $8.33	30 (estimate), less than 36.	22.5 percent	5.10	1.24
	$8.33 to $16.66		$1.875 each		2.49
	Over $16.66		11.25 percent		
Other (both wheels not in same category).	Not over $12.50	36 or more	30 percent	6.84	1.87
	$12.50 to $16.66		$3.75 each		2.49
	Over $16.66		22.5 percent		
			30 percent		

[1] Shipping costs are 17 cents per pound for juvenile bikes and 19 cents per pound for adult bikes.
[2] Assume parts equal 50 percent of total value and that these can be purchased in Japan for 30 percent less than U.S. cost (duty on bike parts is 30 percent). Then margin equals 0.30 times 0.50, or 15 percent of total value.

NOTE.—Assumption: Wheel diameters of 25 inches or less are juvenile bikes. Wheel diameters over 25 inches are adult bikes.

Consequently, it appears that only in the case of relatively expensive bikes will there be even a small advantage for a Guam assembly operation,[7] and it is in this part of the market that foreign producers seem to have had their greatest success in penetrating the U.S. market. The greatest import volume by far (over ten times the next largest category) is in bicycles with wheels over 25 inches, weight under 36 pounds and value over $16.66. 1964 U.S. imports were over $16 million.[8]

References

1. "Bicycles: S.I.C. 3751," Industry Fact Sheets, Agency for International Development, U.S. Department of State, 1959.
2. Huffman Manufacturing Co., Azusa, California.
3. Kashiro Usumi, Assistant Manager, Overseas Division; Mark M. Ito, Manager, Overseas Department No. 1; Nobuyuki Miyake and Kunio Satake, Overseas Division, Bridgestone Tire Co., Ltd., Tokyo.

8. MEASURING, TESTING AND CONTROLLING INSTRUMENTS

A list of products falling within this category, showing present U.S. import duties, is shown in table 11. Assembly of this type product on Guam would be feasible. Skill levels that are required are not high, although a minimum of 4 to 6 weeks' training is required. Women could comprise a substantial proportion of the assembly work force. Location in close proximity to markets is not important with the less sophisticated off-the-shelf type of instrument. However, the converse is true with highly sophisticated, expensive instruments. High freight cost is less of a problem with a product of this type since the value-to-weight ratio is sufficiently high to reduce unit freight to tolerable levels.

[7] For example, if the margin is 15 percent, a lightweight adult bike would need a wholesale value of about $34 for parts savings to equal freight costs. See table 8.
[8] "U.S. Imports for Consumption and General Imports," 1964 annual Bureau of the Census, U.S. Department of Commerce.

TABLE 11.—*Measuring testing and controlling instruments*

[U.S. import duty]

Hydrometers and similar floating instruments	42.5 percent.
Optical pyrometers	50 percent.
Barometers, survey-cineroid with altimeter setting	28 percent.
Polarimeters, refractometers, spectrometers, photometers and calorimeters.	50 percent.
Taximeters	42.5 percent.
Speedometers and tachometers (not for highway vehicles).	35.0 percent plus $2.25 each.
Electrical measuring equipment such as tachometers and anemometers.	35.0 percent plus $2.25 each.
Meters (ampere-hour, watt-hour, gas, liquid, flow and heat):	
Less than $10 valuation	32.5 percent plus $1.50 each.
Over $10 valuation	32.5 percent plus $2.25 each.
Stroboscopes	35.0 percent plus $2.25 each.

That a Guam producer would enjoy a substantial advantage in the U.S. market in competition with foreign producers is readily apparent from an examination of the appropriate rates of duty. Whether a Guam-based assembly operation could meet the 50-percent rule of section 301 is less certain, since conflicting data were found. One manufacturer felt that this requirement should pose no significant problems. But representatives of Japanese industry indicated that, in the case of low-duty electrical measuring instruments, Guam assembly would account for no more than 20 percent of total value at most. It was their opinion that only in the case of the most sophisticated equipment would a Guam assembly operation qualify under Section 301, and then only if a local machine shop industry were developed that could make some of the components.

References

1. Robert Spiegleman, Stanford Research Institute, Menlo Park, Calif.

2. R. Jensen, vice president, manufacturing, Beckman Instruments, Fullerton, Calif.

3. Hewlett Packard Corp.

4. Takaomi Kakurai and Nobuo Abe, Overseas Operations, Yokogawa Electric Works, Ltd., Tokyo, Japan.

5. Tetsuji Kayama, Manager, and T. Fujii, Chief of General Affairs Section, the Japan Measuring Instruments Industrial Federation, Tokyo, Japan.

9. PRODUCTS SUBJECT TO U.S. EXCISE TAXES

In addition to the fishing tackle case already noted, a number of other products are subject to substantial U.S. excise taxes. If the excise tax collected on such products manufactured in Guam and exported to the United States were returned to the government of Guam in accordance with the apparent intent of the Organic Act, all or part of such funds could in turn be used to subsidize the Guam manufacturer. Distilled spirits, taxed in the United States at $10.50 per proof gallon, would appear to be the leading possibility. Beer, at $9 per barrel, might also be of interest. Cigars, taxed at $2.50 to $20 per thousand, are another candidate. Such products would, presumably, enter the United States duty-free under headnote 3a.

10. PETROLEUM REFINING

The local market, civilian and military combined, would not support a petroleum refinery. If additional military demand in the Western Pacific region could be supplied from a Guam refinery, such an operation might become feasible—provided a deviation could be obtained from the military's usual practice of short-term procurement. It is assumed that full use of tax rebates from the Guam Economic Development Authority would be necessary. A plant with capacity of about 20,000 barrels per day might require 25 to 50 people, excluding marketing personnel. Probably a 15,000-barrel-per-day capacity would be the minimum worth considering. What needs to be determined is whether military logistical problems would be lessened (or at least unaffected) if a refinery in Guam made it possible to supply part of the military demand for refined products in the Western Pacific directly from Guam. This would eliminate some of the long-distance product transportation from the Persian Gulf area or from the United States and would allow the use of dirty tankers for crude oil on the long hauls. Given a purchase commitment (which is not unprecedented), a Guam refinery could supply refined products at no price disadvantage to the military as compared with alternative sources.

11. MISCELLANEOUS PRODUCTS

A number of consumer products were found to be subject to high rates of duty. These are widely varied, but it appears they could be assembled in Guam from foreign parts which might be available at prices substantially below U.S. costs. Examples of products included in this group are ornamented barrettes, cigarette lighters, handbags and flat goods, electric irons (other than travel type), toys and pocket knives. Unfortunately, detailed data concerning costs and investments for these products were not available. However, it appears that investment requirements would be little more than the provision of assembly facilities. In some cases, additional operations (such as the actual manufacture of parts) might be required in order to satisfy the 50-percent requirement of section 301 and possibly to qualify the product as truly a manufacture of Guam.

Barrettes, for example, can be molded from plastic on Guam and decorated with imitation pearls or pearl beads (which, if imported into the United States, would be subject to a 40-percent duty). The finished product which would otherwise be subject to a 55-percent duty might be shipped to the U.S. duty free. Cigarette lighters are subject to duties which range from 20 to 50 percent. The lighters and their cases or bases are assembled from parts and, with proper adjustments to the manufacturing process, could probably be made on Guam utilizing low cost foreign parts and materials amounting to very close to the 50-percent limit. The probability of this product being successfully marketed in the U.S. is subject to some doubt, however, because foreign-made lighters presently enjoy very substantial sales in the U.S. despite prevailing high import duties.

A foreign manufacturer has expressed interest in producing beaded handbags in Guam. His method of operation would be to have the hand beadwork done in Hong Kong or Taiwan and to assemble the completed bags in Guam. Whether this procedure as stated would

qualify as a manufacture of Guam is not known. The assembly of electric irons from foreign parts would probably be subject to similar difficulties, although such processes as the molding of bakelite handles might be done on Guam to qualify the product as a territorial manufacture. The price advantage of parts for irons, however, is somewhat less certain since they are typically mass produced by machine and foreign costs may be little if any lower than U.S. costs.

Although not all toys are subject to very high tariffs, many are, particularly those which appear most capable of assembly from parts. Therefore, there is a potential for Guam in this area. Again, however, as in the case of cigarette lighters, the success of foreign imports in the U.S. market raises questions as to whether the import duties saved would be enough to compensate for higher labor rates and freight charges.

Pocket knives are subject to varying rates of duty, depending upon the unit value of the knife. However, all but the most expensive knives have duties in excess of 50 percent. Blades and other parts are also subject to similar rates of duty. Exactly what processes, other than simple assembly of parts, required to be performed on Guam to meet the 50 percent rule and qualify the product as a true manufacture have not been determined. It does appear, however, that something in addition to assembly would be necessary.

Jewelry manufacture might be done on Guam using imported molds and gemstones and precious metal from the United States. If the value of the gemstones is too high, little tariff advantage is gained because U.S. tariffs on unmounted precious stones are nominal. Tariffs on assembled jewelry items, however, range up to 55 percent ad valorem, and products in the less than $50 price class would probably offer a significant "edge" in some cases. Since there would be little tariff advantage on the raw materials themselves as compared with mainland manufactures, the feasibility of a jewelry enterprise would depend mainly upon substantial cost savings on models or molds obtained from Hong Kong. Whether this saving would be sufficiently large to make a jewelry venture attractive could not be accurately determined.

II. IMPORT REPLACEMENT

A. Commercial Production of Fruits and Vegetables

The feasibility of commercial crop production on Guam depends upon the competition which Guamanian farmers must face in crop production; the availability of suitable land; an adequate labor supply; managerial and entrepreneurial talent on the island; and possible future government assistance to agricultural producers. This section considers these factors and proposes the conditions that must obtain if commercial agriculture is to replace present crop imports into Guam.

1. Markets and Market Outlets for Commercial Crops

Off-island sources of fruits and vegetables are of considerably greater importance than local supplies sold commercially. Table 12 indicates that imports for civilian consumption of canned and fresh fruits and vegetables alone amount to more than 4 million pounds a year. Frozen fruits and vegetables (presumably buried in the "unspecified foodstuffs" category) would raise the total. Local production of high-quality fruits and vegetables in adequate and reliable quantity could substitute for part of these imports if sold at anything approaching competitive prices.

Table 13 shows the dollar value of locally grown commercial crops marketed during the first six months of 1965 in Guam's retail outlets, the Farmers' Market, and military outlets. The total value of commercial crops marketed during the period July 1965 through June 1965 was $144,692. Table 13 also shows the monthly variation in volume of fruits and vegetables marketed in the three major outlets. Retail outlets range from under 25 percent to over 50 percent of the total, while the Farmers' Market distributes from 40 percent to over 70 percent of the crops marketed. Military markets range from 4 to 16 percent, but this proportion includes only the limited amount that Guamanian farmers sell to the military.

TABLE 12.—*Commercial imports, exports and transshipments of selected agricultural products, fiscal 1964 (thousand pounds, except as otherwise specified)*

	Imports	Exports	Transshipments
Corn	491	8	2
Onions	623	42	73
Potatoes	736	44	112
Vegetables:			
Canned	1,006	17	103
Fresh	1,039	29	56
Fruit:			
Canned	859	31	91
Fresh	1,391	19	58
Juice, canned (thousand cases)	32	1	10
Foodstuffs, unspecified	5,322	144	731
Feeds	9,049	109	158
Poultry, frozen	1,518	41	89
Beef, frozen	3,343	79	35
Pork, frozen	2,360	33	26
Sausage, frozen	506	10	7
Meat, canned	1,178	46	1,034
Fish:			
Canned	446	60	170
Frozen	485	6	14
Salted	83	2	3
Eggs (thousand cases)	6	1	1

Source: Commercial Port and Guam Department of Commerce.

TABLE 13.—*Guam-grown fruits and vegetables marketed during the first 6 months of 1965*

	Guam retail	Farmers market	Armed Forces	Total
January				
Dollar value	1,818	4,725	781	7,324
Percent of total	24.8	64.5	10.6	
February				
Dollar value	2,493	4,339	364	7,226
Percent of total	34.5	60.0	5.5	
March				
Dollar value	3,993	10,776	610	14,779
Percent of total	25.0	72.9	4.1	
April				
Dollar value	4,714	4,959	1,913	11,585
Percent of total	40.7	42.8	16.5	
May				
Dollar value	8,715	6,642	682	11,039
Percent of total	53.6	60.2	6.2	
June				
Dollar value	8,842	6,059	1,689	16,590
Percent of total	53.4	36.7	9.9	

Outlets for the marketing of fruits and vegetables grown in Guam or imported from off-island sources do not conform to the pattern of produce marketing familiar in other parts of the United States. Not only do the military commissaries and base exchanges provide outlets for a large military population located at some distance from civilian markets, but the civilian markets themselves—with few exceptions—do not conform to the usual U.S. wholesale-retail supermarket pattern. Finally, a large but indeterminate volume of produce reaches consumers through informal channels from home gardens or from farmers on neighboring islands.

From 60 to 80 percent of the produce wholesaled in Guam is distributed through fewer than 12 medium-sized "supermarkets." In 1959, the major supply of produce was provided by 30 of the larger farmers, and it is likely that there are fewer major producers today, although volume may have increased somewhat. An additional com-

plicating factor in estimating the retail movement of produce is that the larger retail "supermarket" outlets also function as wholesalers to the smaller village markets and to each other. It has not been possible to obtain a breakout of wholesale versus retail marketing of fruits and vegetables for these combined operations.

A second level of produce marketing on Guam is the local village store, usually a family-operated, one-room retail outlet. Although no data are available on the volume of locally grown produce marketed through these outlets, field inspection indicated that most of the supply (with the exception of those fruits and vegetables which cannot be grown on Guam) is obtained directly from local farmers. It is estimated that little local produce is obtained through wholesale outlets.

A third outlet for Guamanian fruits and vegetables is the Farmer's Market, presently located in the Paseo de Susana on Marine Drive in Agana.[9] The number of farmer participants varies, but the operation is fairly small with 15 to 20 operators paying a fee to maintain produce stalls six days per week. A small fish market is operated in conjunction with the produce market. The central location of the market limits patronage to those living in the vicinity of Agana and its adjacent villages. In March 1962, the market recorded 6,615 customers. In the previous month the following results were obtained:

Average production per day (pounds)	2,308
Average sale per day (pounds)	1,111
Average value of sales per day	$378.08
Total for the period:	
Production (pounds)	16,156
Sales (pounds)	7,777
Value of sales	$2,796.55

The five produce items which ranked highest in total sales during the survey period were, respectively, yard long beans (31 percent of sales), Carabao mango (24 percent), Victor tomatoes (24 percent), eating bananas (11 percent), and Chinese cabbage (10 percent). Sales of these items comprise about 50 percent of the produce supplies placed on sale at the market. The efficacy of the Farmer's Market in supplying a major outlet for the civilian marketing of Guam's produce seems doubtful, considering the limited range of its customers, the relatively small volume of produce that flows through it, and the low sales-to-supply ratio. It is, moreover, an inherently inefficient method of retailing.

2. THE MILITARY MARKET

Commissaries, base exchanges, and officers' and enlisted messes comprise the military market for fruits and vegetables in Guam. Although commissary facilities are comparable to those of the average mainland supermarket, the designation of Guam as an overseas post has resulted in the provision of goods and services considerably beyond those found on a military installation of comparable size in the continental United States.

Several characteristics of the military food outlets are particularly relevant to the commercial production of fruits and vegetables in Guam. Competitively, of course, the commissaries and base exchanges have an advantage over local retail outlets in that facilities,

[9] The Guam Department of Agriculture plans to construct a new market in the Mangilao area.

layouts and sizes are not fully reflected in overhead costs; they are not dependent upon a profit margin; and they are located advantageously with respect to the residences of their military customers. Of more relevance to their competition with civilian outlets, however, is the fact that military outlets are not limited by any single source of supply. They are permitted to purchase produce in those agricultural areas which offer the best quality at the lowest prices. Furthermore, the on-sale Guam price does not include transportation costs so that in most instances Guam producers are competing with stateside mass agricultural producers.

On the other hand, the availability of produce is governed by the vagaries of ocean transport. Usually fruits and vegetables are available only for a few days after arrival of the supply ship. Since much of Guam's civilian population also has access to commissary and base exchange privileges through civil service employment, the problems of bulk and hoard buying have become aggravated in military outlets. Past attempts by commissary officers to exercise control over bulk buying have not been particularly successful, and this aspect of military outlet marketing is a cause of repeated complaints. The periodicity of produce shipments to Guam's military outlets also means that fruits and vegetables remain fresh only for a short time, even if the supply holds out. For this reason, there are broad swings in the criteria for fresh produce on Guam: Stateside produce is cheaper and of better quality immediately after a supply ship arrives; stateside and Guam produce may be roughly comparable in quality and supply for a period of time thereafter; and, prior to the arrival of another ship, Guamanian produce is superior in quality and supply to any stateside produce available in commissaries.

Although available data on the potential military market for commercial crops are inadequate for an analysis of future military needs, they do provide an indication of the major fruit and vegetable requirements, their seasonal variations, and the approximate value of the requirements. The major monthly requirements of the Air Force and Navy are as follows:

	Navy [1] (pounds)	Air Force [2] (pounds)	Total (pounds)	Value [3]
Tomatoes:				
United States	50,000	11,000	61,000	
Guam		4,000	4,000	$10,400
Cucumbers:				
United States	8,000			
Guam		3,400	11,400	1,026
Watermelons	20,000	4,000	24,000	1,200
Green peppers	4,500	2,499	6,999	1,242
Cantaloupe	5,000	3,000	8,000	1,040
Honeydew melons	5,000		5,000	
Bananas	10,000			1,100
Pineapples	9,000			450

[1] June 28, 1965, letter from Rear Adm. H. V. Bird, commander, Naval Forces Marianas, to Frank Perez, chairman, Committee on Economic Development, 8th Guam Legislature.
[2] Air Force requirements of commissary, base exchange, officers' clubs, and NCO clubs.
[3] Value calculated from "standard price" given in letter from Admiral Bird.

3. COMMERCIAL CROPS SUITED TO GUAM

More than 70 fruits and vegetables are grown in Guam, and about 20 more which cannot be grown there are imported from either the U.S. mainland or foreign sources. Local produce could be partially substituted for imports if its quality and quantity levels could be raised to meet consumer preferences. Thus far, however, very limited results have been obtained because of quality and supply problems. Highly perishable products such as tomatoes and avocados can compete only during the limited portion of the year when they are harvested in Guam. Head cabbage grown in Guam has low yields and tends to split. A good hybrid sweet corn has not yet been developed to compete with imported sweet corn. Citrus has a coloring problem, and production is still depressed by the damage caused by Typhoon Karen. However, past experience indicates that excellent citrus fruits can be grown on Guam, and these should find ready acceptance in both civilian and military markets. A number of other products should be capable of increased sales in local markets, including bananas, watermelons, cantaloupes, papaya, several kinds of green beans, onions, radishes, cucumbers, peppers, etc. It is unlikely that Guam can compete effectively with large-scale commercial production in off-island supplying areas over a large range of products. Even with the addition of high transportation costs, the imported item will often enter Guam outlets at a price lower than that of the local product. In some instances, however, if Guam farmers are able to assure supply and quality at a price even somewhat above that of the imported item, the fresher local product should find a market.

4. COMPETITION FOR COMMERCIAL CROP MARKETS

Competition in the marketing of commercial fruits and vegetables comes from two sources: farmers in Tinian, Rota, and Saipan; and commercial farmers in the United States. Competition from trust territory farmers has long been of concern to Guam's Department of Agriculture. Not only can trust territory farmers undersell local farmers because of lower wage scales, they can also saturate the local market with a few crops, making it difficult for Agriculture to advance its program of planned production. The Department is negotiating with trust territory officials in the hope that future commercial crop production on Guam can be coordinated with that of the trust territory so that quality and production continuity can be improved. The Department does not anticipate any relaxation of the military's requirement for a firm commitment on quality and continuity, and thus feels that any sharing of the military market must be preceded by improvement in commercial crop production.[10]

Although commercial agriculture was once considered promising to the economic development of the Trust Territories, cost and shipping problems will hamper success. The trust territory approach has been to bring together competent farmers to work lands on Rota and Tinian which were chosen by agricultural experts as having the highest potential production capability. The objective was to establish model farming areas where field sizes would be suitable for mechanized operations and from which crops could be harvested with a minimum of

[10] Communication with David Flores, Director of Guam's Department of Agriculture.

labor. Local farmers, chosen for their proved farming ability, would commute daily from their homes to operate these plots. Trust territory advisers believed that such an operation could supply the total market for commercial crops in Guam and meet all requirements for quality and continuity of supply.[11] It is too early to evaluate this program's success, but there is no doubt that such a program would be very difficult to counter with local commercial agriculture.

5. LAND AVAILABILITY

To a considerable extent, the feasibility of commercial crop production on Guam depends upon the availability of soils well suited to vegetable and fruit crops. Figure 1 of appendix 2 shows the distribution of agricultural lands according to capability of the soils to support a variety of crops. Also in appendix 2 is the distribution of public and private lands on Guam. The ultimate feasibility of agricultural development on the island rests upon the availability of private lands of economically productive parcels, or private lands which could be leased or rented for agricultural purposes.

The largest area of class IA land, considered the prime commercial crop land on Guam, is nearly 50 percent under the control and use of the military. One large tract is occupied by a military antenna farm; such use is not likely to be abandoned. Other class IA lands are few and limited in area; class IA land cannot be considered particularly important for future agricultural use.

Class IB land has many of the advantages of class IA land except for the requirement for drainage, flood or erosion control when irrigated. The major areas occupy the river valleys of Guam's east coast; the second largest area is on the west coast and is under the control of the Department of Interior; other areas are chiefly under private ownership. This land class becomes more significant when linked with class IIA. Class IB land occupies river valleys which separate areas of IIA land in the southeast of Guam and should be linked in any agricultural development plan.

Class IIA lands, the rolling uplands between the areas of IB land, are moderately fertile and will require soil management to control erosion tendencies. In terms of extent, it is the most significant land class. Large private holdings of class IIA lands extend inland from the southeast coast; little of this land is publicly owned. Areas along the west coast, particularly in the Agat area, are controlled almost entirely by the military or the Department of Interior. Class IIA land in the center of the island is partially private and partially public land. The remainder of class IIA lands occur as small, discontinuous tracts along the south coast and are chiefly under private ownership.

Class IIB lands are discounted for agricultural purposes because of considerable drainage and flood control problems. One example of this land class is the Agana swamp, mentioned here because of past speculation on the possible uses of swamp or marsh land, and because it has been given a high classification in previous capability studies. Another example is the wet, poorly drained soils of the coastal and valley flats.

The availability of classes IB and IIA private lands in holdings large enough to be farmed economically is severely limited on Guam.

[11] Ivan Bloch, Nathan & Associates, and M. N. Sproat, Director of Agriculture, Trust Territory of the Pacific Islands, Mariana Islands.

As indicated in appendix 2, only two land parcels are recorded in the 1,000- to 5,000-hectare category, and less than 1 percent of the holdings are from 250 to 500 hectares. Therefore, it will be difficult to assemble parcels for large-scale commercial ventures.

The limited scope of the commercial fruit and vegetable market in Guam suggests that such a venture will require an integrated approach—beef, swine and chicken production combined with commercial crops for local consumption, and perhaps a specialty crop such as bananas, pineapples, or peppers. The availability of public lands in the two recommended capability classes will depend upon the future ability of the government of Guam to lease or sell lands for private purposes.

6. LABOR AND MANAGEMENT

One factor that might work against the development of commercial crop production is the availability of agricultural labor. In the past, Guamanians turned to agriculture only when other work was unavailable. The present labor market indicates that few local agricultural laborers will be available on a reliable basis so long as there is the alternative of higher paying and less strenuous governmental, commercial or industrial employment on the island. An alternative frequently suggested by foreign entrepreneurs interested in farming on Guam is the importation of alien workers, usually at a wage rate drastically lower than the current legal minimum.

In addition, there is little evidence that Guam could provide the managerial or entrepreneur skills necessary to support a commercially viable agricultural operation.

7. GOVERNMENT OF GUAM PARTICIPATION

The Guam Department of Agriculture has attempted to introduce crop varieties better suited to Guam than those presently grown; has provided assistance in clearing land; and has developed advisory services in pest control, land management and marketing. It has also encouraged the use of fertilizers and has attempted to coordinate and improve the marketing of crops. However, these efforts have been chiefly directed toward small, family-operated, subsistence operations. Since there are possibly 300 full-time and part-time farmers on Guam, of whom only 20 or 30 can be termed commercially active, the Department's orientation does not seem at odds with present conditions. Development of a modern, commercial truck farming industry on the basis of locally available financial and managerial resources, however, would not appear to offer sufficient potential to justify the heavy expenses that will be involved for the government of Guam.

8. CONCLUSIONS

Commercial crop production has been considered here separately from livestock and poultry production. In view of the problems facing commercial fruit and vegetable farming and the relatively limited market and employment opportunities it will offer, no increase in the level of assistance offered by the government of Guam seems advisable. Most governmental assistance will be best directed toward resolution of land availability problems and other activities involving a mini-

mum of capital investment and other expenses. Off-island investors should be sought to establish viable commercial truck farming operations, but this will probably be most feasible if coupled as a sideline with livestock and poultry production and related activities.

B. Commercial Livestock and Feed Production

1. BROILER GROWING AND PROCESSING

The commercial production of broiling chickens on Guam would serve local and trust territory markets. The initial market is the replacement of the 1.8 million pounds of ready-to-cook chicken imported from the U.S. during 1964. A broiler is a chicken of about 3½ pounds live weight (about 2½ pounds dressed) and about 8 weeks old. The production of broilers has become a highly specialized and competitive business in the U.S., with the industry becoming more integrated vertically each year. Because of the efficiency of the U.S. industry with which the Guam industry would be competing, it is essential that full advantage be taken of economies of scale and integration. Integration of growing and processing of broilers on Guam is further dictated by the market itself, which will support only one processing plant. It would be difficult, at best, to assure the plant a supply of chickens and the growers a market at prices favorable to both without some form of integration, by long-term contract if not by common ownership.

Broiler production requires a substantial degree of skill. Modern operations involve large flocks of birds which are raised entirely under shelter. Carefully formulated high energy rations are required to assure maximum weight gain per pound of feed as rapidly as possible. Feed efficiency and flock mortality are key factors to success and are carefully controlled with appropriate drugs and careful sanitation. The Guam grower could either hatch his own chicks from a parent flock or have day-old chicks flown in from the mainland. In the operation considered here, feed would be obtained from the Guam feed mill.

In order to minimize transportation costs, the processing plant should be located as near as possible to the growing flocks. Live birds enter the plant and are hung head down on a conveyor line where they are killed, bled and scalded. After machine picking of feathers and hand pinning, the birds are singed and washed, their shanks are removed, and they are transferred to the eviscerating line. Eviscerating is accomplished primarily by hand, with the workers specializing in particular phases of the operation. Giblets (heart, neck, liver, and gizzard) are processed and wrapped separately for later insertion into the body cavity. Heads and necks are removed at the end of this line, where the birds are transferred to an automatic sizer and then chilled in vats. When they are sufficiently cooled, the finished birds are packed with ice in crates for shipment.

a. Investment requirements

There are probably as many different types of broiler production operations in the United States as there are growers, with most growers building much of their own equipment. In view of the scale economies and desirability of integration discussed above, the growing of birds will be treated as though it were accomplished on one farm. The total size of the Guam broiler flock will be 114,000 birds.[12] The accepted requirement for confinement rearing is one square foot per bird, so that a total of 114,000 square feet of growing pen space will be required. Pens may be arranged in tiers so that the floor area of the shelter for the birds could be, say, 23,000 square feet (five tiers). Construction requirements for each shelter would be minimal in view of Guam's mild climate. In fact, a roof alone would probably be sufficient although some provision would have to be made to protect the birds from sweeping winds. One or two small buildings for storage and similar functions would be sufficient to complete the structural requirements. Since the birds are to be reared in confinement, there is a minimal requirement for land—an acre or two would be sufficient. Equipment for the farm consists primarily of automatic feeding and watering devices and a waste disposal system. This equipment is not particularly expensive (compared with that of the processing plant) and in the United States is frequently "homemade."

Based on available data, and correcting for the less expensive construction permitted by the mild climate of Guam, a factor of $50 per 100 broilers was assumed as a measure of farm investment.[13] Applying this factor to a flock size of 114,000 birds yields an investment of $57,000. Working capital of $84,000 for two months' expenses must be added, however, since it will take that long to produce the first crop. The total investment for the farm is then $141,000.

Fixed capital requirements for the processing plant are shown in table 14. The design capacity of the plant is 600 birds per hour, although initially it will operate at 372 birds per hour.[14] Adjustments have been made in initial staff requirements and operating costs to suit the less than capacity rate of production. Working capital for two months' expenses for the processing plant has been provided. If the growing flock is divided into subflocks, however, the working capital for 2 months' expenses for the processing plant has been provided. If the growing flock is divided into subflocks, however, the working capital could probably be decreased to 1 month's expenses. Combined investment requirements are shown in table 15.

---

[12] Flock size is determined as follows: The market is 1.8 million pounds of ready-to-cook chickens a year. Since there is an average weight loss of 27 percent in the dressing process, total live weight produced will be 2.6 million pounds annually. Dividing by the average live weight of 3½ pounds per bird gives 743,000 birds. Since the growing time is about 8 weeks, there will be 6.5 "crops" per year, and dividing by this factor yields a flock of 114,000 birds "on feed" at any given time. This flock should actually be divided into about 8 "subflocks" about 1 week apart in age so that there is a uniform supply of birds to the processing plant.

[13] L. B. Darrah, "Business Aspects of Commercial Poultry Farming," the Ronald Press Co., 1952, p. 193.

[14] The plant operates 8 hours per day for 250 days a year, a total of 2,000 hours. Dividing the annual production of 743,000 birds by 2,000 gives 372 birds per hour.

TABLE 14.—*Broiler processing—Plant and equipment*

Capacity: 600 birds per hour.
Initial operation: 372 birds per hour, 1,800,000 pounds dressed weight.

Investment:	
Land (1 acre)	$5,000
Building (5,000 square feet)	40,000
Equipment (including installation):	
Chicken processing equipment (including overhead conveyors, ice system, killing line, scalder, mechanical pickers, quill pullers, singer, washers, giblet line with gizzard skinner, and cooling tank)	45,000
Ancillary equipment (including plumbing, office furniture and fixtures, refrigerator and equipment, etc.)	6,000
Total fixed capital	96,000
Working capital	20,000
Total investment	116,000

TABLE 15.—*Broiler production—Total investment*

Growing (farm, plant, and equipment)	$57,000
Processing (plant and equipment)	96,000
Total fixed capital	153,000
Growing (farm working capital)	84,000
Processing (plant working capital)	20,000
Total working capital	104,000
Total investment, integrated production	257,000

Source: George B. Rogers and Edwin T. Bardwell, "Marketing New England Poultry." Pt. 2: Economies of Scale in Chicken Processing, Bulletin No. 450, Agricultural Experiment Station, University of New Hampshire, 1959.

b. Personnel requirements

Initial staffing for the processing plant is indicated in table 16. These levels are based on the initial production of 372 birds per hour. Total staff would increase to 34 (6 indirect and 28 direct) if the plant were to operate at its full capacity of 600 birds per hour. The total personnel requirement of 22 does not include farm labor for the growing flocks. The number of workers required for growing operations varies widely due to the nature of the industry, with large-scale efficient units using relatively few employees and some small (often family) operations using larger ratios of workers to birds. However, it appears that not more than about three people would be needed if all growing is carried out on one farm, utilizing as much mechanical feeding and watering equipment as possible.

TABLE 16.—*Broiler processing—Personnel*

	Unskilled	Semiskilled	Skilled
Direct labor:			
Receiving and holding			
Killing	1		
Dressing		1	
Eviscerating	3		
Cutting		8	
Sizing, cooling, packing, shipping	1		
	3		
Total direct labor (17)	8	9	
Indirect labor:			
Manager			
Foreman		1	
Office		1	
Repair and maintenance		1	
		2	
Total indirect labor		5	
Total personnel required for plant	22		

Source: George B. Rogers and Edwin T. Bardwell, "Marketing New England Poultry. Part 2: Economies of Scale in Chicken Processing," Bulletin No. 450, Agricultural Experiment Station, University of New Hampshire, 1959.

The processing plant operates with relatively inexpensive direct labor. The highest level required is semiskilled workers for the killing and eviscerating functions. Since eviscerating is done by hand, some skill must be developed so that all viscera are completely removed with an absolutely minimum loss of edible meat. An edible meat loss of as little as one-half ounce per bird would amount to over 23,000 pounds of meat in a year; at 35 cents per pound, a revenue loss of $8,000 would result. The manager would have charge of the entire plant and would also purchase supplies and perform the selling function. The foreman would be responsible for the day-to-day plant operation.

Both the manager and foreman should be thoroughly experienced in the operation of a broiler processing plant. They should be able to train the work force sufficiently to have substantial production in about 2 weeks. Full production at maximum efficiency should be reached in about 2 additional weeks.

c. Operating costs and sales revenues

An estimate of broiler growing costs is shown in table 17. The estimate was developed in the following manner. Available data indicated that the proportionate costs of growing broilers in the United States are feed (69 percent), chicks (17 percent), labor (4 percent), housing and equipment (4 percent), fuel and electricity (2 percent), and miscellaneous (4 percent).[15] Feed and chick costs were assumed to be one-third greater in Guam than in the United States, and these adjustments were added to the original proportions; other costs were assumed to be about the same. The new distribution of percentages (92, 23, 4, 4, 2, and 4 percent, respectively), totaled 129 percent. Dividing by this total gave the proportions shown in the table. Using the current U.S. conversion factor of 2.14 pounds of feed per pound of live weight,[16] a total annual feed requirement of 2,800 tons was determined. The cost of this feed would be $358,000, which represents 71 percent of the total growing cost. Dividing feed

[15] Louis M. Hurd, Modern Poultry Farming, 4th ed., Macmillan Co., 1956.
[16] Barton A. Westerlund, Broiler Market Prospects for the Independent Processor, With Special Reference to Arkansas, University of Arkansas for the Small Business Administration, 1963.

cost by 0.71 gives a total cost of $504,000, and applying the other percentages to this total gives the breakdown shown. Although this method is somewhat less accurate than may be desired, it does appear to be both reasonable and conservative in that it tends to overstate costs rather than understate them. It is based primarily on feed costs, which are nearly three-quarters of the total growing cost and were calculated from data derived from the feed mill study.

TABLE 17.—*Broiler growing costs* [1]

Item	Percent of total cost	Amount
Feed (2,800 tons at $127.75) [2]	71	$358,000
Chicks	18	91,000
Labor	3	15,000
Housing and equipment	3	15,000
Fuel and electricity	2	10,000
Miscellaneous	3	15,000
Total growing costs	100	504,000

[1] See text for discussion of methodology.
[2] 1963 average U.S. price for broiler growing mash was $96 per ton. Adding $32 per ton freight to Guam gives $128 per ton selling price at the Guam feed mill (see feed mill section). Feed mill can produce necessary quantity of feed by adding a 3d shift which results in a processing cost reduction of $3 per ton, half of which it is assumed would be retained as profits by the mill, and half of which would be passed on to broiler growers, making mash price $126.50 per ton. Assuming that half of the feed would be pellets and crumbles at $129 per ton gives average price of broiler feed of $127.75 per ton.

The processing costs shown in table 18 are for the processing plant only and do not include the cost of the live birds. As was stated previously, the Guam broiler industry should be integrated vertically at least to include growing and processing. Consequently, the total cost shown in this table is restricted to that which is over and above the cost of growing the birds. The unit processing cost of approximately 4.7 cents per pounds of live weight could be reduced to about 3.8 cents per pound if the plant operated at 100 percent of capacity.

TABLE 18.—*Broiler processing costs*

Plant labor:	
Direct:	
Semiskilled (9, at $3,600)	$32,000
Unskilled (8, at $3,000)	24,000
Total direct labor	56,000
Indirect:	
Manager	14,000
Foreman (1, at $6,400)	6,000
Office (1, at $3,400)	3,000
Repair and maintenance (2, at $4,800)	10,000
Total indirect labor	33,000
Total labor	89,000
Water and Power	3,000
Depreciation:	
Building (20 years)	2,000
Equipment (10 years)	5,000
Total depreciation	7,000
Supplies and materials	22,000
Total processing costs	121,000

Source: George B. Rogers and Edwin T. Bardwell, "Marketing New England Poultry. II. Economics of Scale in Chicken Processing, Bulletin No. 459, Agricultural Experiment Station, University of New Hampshire, 1959.

Total operating costs and revenues for the growing and processing of broilers are shown in table 19. The profit on sales is barely above the break-even point. It should be noted, however, that this model is based on present civilian consumption only. Expansion of this market should result from the availability of fresh poultry to the retail customer. As volume expands, unit costs will decrease. Operating the processing plant at 100 percent of capacity, for example, would increase gross margin by over $20,000. This would raise the margin on sales to about 4 percent and the after-tax returns to 9 percent on total investment and 15 percent on fixed capital. The overall cost of broilers is very sensitive to the cost of feed, and any reduction in feed price would bring a reduction in chicken price which in turn should stimulate consumption.

TABLE 19.—*Broiler production: Total operating costs and revenue*

Expenses:	
Growing cost (see table 14)	$504, 000
Processing cost (see table 15)	121, 000
Total expenses	625, 000
Revenue: 1.8 million pounds of ready-to-cook broiling chickens (average value of 1964 Guam imports 26.3 cents per pound [1] plus effective freight 8.7 cents per pound)[2] at 35 cents per pound	630, 000
Profit on sales	5, 000
Provision for Federal income taxes	1, 000
Net profit	4, 000
Margin on sales (pretax)	percent .8
Return on total investment (after tax)	percent 1.6
Return on fixed capital (after tax)	percent 2.6

[1] "U.S. Trade With Puerto Rico and U.S. Possessions," FT 800, 1964 Annual, Bureau of the Census, U.S. Department of Commerce.

[2] Stowage factor is 67 and freight rate is $117 per 40 cubic feet or 1 long ton (PFEL): (67/40×$117)÷2240=8.7 cents per pound.

d. Vertical integration

The need for vertical integration has previously been mentioned with respect to economies of scale, markets for growers and source of supply for the processor. That the initial production to replace current civilian imports is barely a profitmaking undertaking has also been seen. This initial profit picture could be improved dramatically if feed prices were reduced somewhat. The ideal organization of the broiler industry would be one of complete integration of the growing and processing functions and including the feed mill. In this manner, the cost of feed could be adjusted within the overall operation so as to subsidize, in effect, the broiler production until the market expands sufficiently to reduce costs to a level which results in broilers being truly profitable per se. Passing part of these cost reductions on to the customer may lower prices sufficiently to make them competitive in the local military market. At this point, a substantial increase in volume would occur; and in the broiler industry, volume is usually the key to profitability.

e. Conclusions

Although initially not really profitable, the production of broilers presents a good investment opportunity for the long term. Ideally

the feed mill, growing flocks and processing plant will be integrated. This integration is of great advantage to the broiler operation and would, in the long run, be beneficial to the feed mill as well by giving it an assured high volume market for mixed feeds.

References

1. "Broiler Feeding," Animal Husbandry Research Division, U.S. Department of Agriculture, 1959.
2. Bernard F. Tobin and Henry B. Arthur, "Dynamics of Adjustment in the Broiler Industry," Division of Research, Graduate School of Business Administration, Harvard University, 1964.
3. L. B. Darrah, "Business Aspects of Commercial Poultry Farming," the Ronald Press Co., 1952.
4. Kenneth D. Naden and George A. Jackson, Jr., "Financing Western Broiler Production," Bulletin No. 753, California Agricultural Experiment Station ,University of California, Davis, 1956.
5. Louis M. Hurd, "Modern Poultry Farming," fourth edition, Macmillan Co., 1956.
6. Barton A. Westerlund, "Broiler Market Prospects for the Independent Processor, With Special Reference to Arkansas," University of Arkansas for the Small Business Administration, 1963.
7. Rex E. Childs and Roger E. Walters, "Methods and Equipment for Eviscerating Chickens," Market Research Report No. 549, Agricultural Marketing Service, U.S. Department of Agriculture, 1962.
8. R. O. P. Farrish and S. K. Seaver, "Factors Affecting the Output, Size, Costs and Location of Poultry Plants in Southern New England. Part 1: Costs, Efficiency and Economics of Scale in Broiler Processing Plants," Bulletin No. 342, Storrs Agricultural Experiment Station, University of Connecticut, 1959.
9. George B. Rogers and Edwin T. Bardwell, "Marketing New England Poultry. Part 2: Economies of Scale in Chicken Processing," Bulletin No. 459, Agricultural Experiment Station, University of New Hampshire, 1959.
10. George B. Rogers and Edwin T. Bardwell, "Marketing New England Poultry. Part 4: Structure and Performance of the Assembly System," Bulletin No. 476, Agricultural Experiment Station, University of New Hampshire, 1963.

2. FEED MILL

The initial market for a Guam feed mill would be the local egg producers who are currently buying imported foods for their flocks. In fiscal year 1964, slightly over 9 million pounds of feed were imported into Guam;[17] the initial annual production of the feed mill would be 5,000 tons. Since the present price of mixed feeds includes freight costs from the United States, the Guam feed mill should be able to compete successfully at current prices for virtually the entire market, although it offers no price advantage for its product. It does offer a more reliable source of supply since it does not rely on only one carrier for deliveries (as is the case with imported feeds). The product of the local mill will be substantially fresher, and therefore higher in food value per pound, since it can be ground and mixed as needed without the necessity for storing ground feeds (which deteri-

[17] Commercial Port data.

orate more rapidly than unground grains) for long periods of time in transit and between boat arrivals. A local mill can vary the ration to suit local conditions, thereby producing "custom" feeds for the price of a standardized ration.

A mill would store the various ingredients as they are received. Processing begins with the ingredients being released from bulk storage. After grinding, the ingredients are weighed and then thoroughly mixed. Other ingredients (such as vitamin and mineral supplements, fats and oils, fish meal, molasses, etc.) are added during the mixing process. The completed mixed feed, or "mash," is then stored in bulk. It may be sold either in this form or packed in 100-pound sacks. The mash may also be fed into the pellet mill, with pelleted feed being sold in either bulk or bags. Further processing of pellets by crushing them to form crumbles may also be done, with the product again being sold in either bulk or bags.

a. Investment requirements

The proposed feed mill is a completely integrated plant with the capability of performing all the operations and producing all the products described above for all types of poultry feeds. It utilizes a minimum of direct labor in the manner of present U.S. plants. The flow of bulk materials is accomplished by gravity wherever possible, with an elevator leg used for lifting and simple conveyors used for lateral movement. Provisions have been made for truck loading and unloading of bulk feeds and grains. The mill can, with the addition of more storage tanks, produce cattlefeeds. It is designed to produce 10 tons of feed per 8-hour shift. Consequently, a two-shift operation will produce 5,000 tons per year to serve the present market. A three-shift operation would produce 7,500 tons annually, thus providing for some growth in present egg production and the future development of a broiler growing operation. In addition to present local egg production, approximately 85,000 dozen eggs were imported during 1964,[18] and the Navy commissary requires over 200,000 dozen eggs annually.[19] On the basis of 5 to 6 pounds of feed per dozen eggs,[20] this portion of the presently unfilled egg market would require an additional 700–850 tons of feed annually—about 3 tons per day. If the total military market for both eggs and poultry (commissaries, messes, and clubs) is considered, a feed mill much larger than the one described here would be feasible.

The total initial investment required for the mill itself is $133,000, as shown in table 20. This mill is relatively small by U.S. standards. However, it has the capability of being expanded with a minimum of cost and effort. For example, an additional investment of about $30,000 for more storage tanks, another elevator leg, and additional distributor spouts, etc., would permit about twice the output of the study mill. This increase could be accomplished with only one or two additional employees; consequently, a reduction in costs on the order of $10 per ton would be realized. The equipment shown in the table is capable of producing this higher output if it is all operated continuously. The initial output could be accomplished with intermittent operation of the major equipment items (grinder, mixer,

[18] "U.S. Trade With Puerto Rico and United States Possessions," FT 800, 1964 annual, Bureau of the Census, U.S. Department of Commerce.
[19] J. R. Wachutka, Lt., S.C., U.S.N., OIC Commissary Store, NAVSTA.
[20] Lewis M. Hurd, "*Modern Poultry Farming*," fourth edition, Macmillan Co., 1956.

pellet mill, etc.). Although the output is shown as being half mash and half pellets and crumbles, these proportions may be varied since the pellet mill provided is capable of handling 80 percent of the total output. Working capital has been provided for 1 month's expenses. If the feed mill follows the practice of financing its customers (as is common in the U.S. broiler industry), 3 months' working capital would have to be provided—an additional $100,000.

TABLE 20.—*Mixed feed mill: Plant and equipment*

Investment:	
Land (1 acre) [1]	$5,000
Buildings (5,000 square feet) [1]	40,000
Storage tanks and bins [1]	25,000
Equipment (including installation): [2] Includes scale with hopper, 10-horsepower horizontal batch mixer, elevator leg, truck loading and and unloading facilities, 30 horsepower grinder, 25 horsepower pellet mill, vertical cooler, crumbler, scalpers, liquid fat system, molasses system, 15 horsepower boiler, 350-bushel grain trucks, bagging equipment, and conveyors, distributor, spouts, etc	63,000
Total fixed capital	133,000
Working capital	50,000
Total investment	183,000

Capacity: 10 tons per 8-hour shift (5 tons mash, 5 tons pellets and crumbles).
Initial operation: 2 shifts per day, 5,000 tons annual output.

[1] "A Small Country Elevator for Merchandising Grain—Designs and Recommendations," Marketing Research Report No. 367, Agricultural Marketing Service, U.S. Department of Agriculture, June 1960.
[2] Estimated from data obtained from references 3, 5, 6, 7, 8, 9, and 10.

b. Personnel requirements

Total employment for the mill is 11, 4 of whom are direct labor; 2 are unskilled; and 2 are skilled workers. One of each will work each shift. The balance of the staff consists of a manager, two general officeworkers, and four other workers (truckdrivers, helpers, and the like). The manager (who may also be the entrepreneur) will supervise the entire operation in addition to performing the buying and selling functions.

The manager must have a thorough knowledge of the formulation and production of mixed feeds. Once he has trained the skilled workers, however, they should be able to supervise routine production. The skills required for the operation of the mill are not great, and full production should be reached within 2 or 3 weeks.

c. Operating costs and sales revenue

A pro forma operating statement is shown as table 21. All fringe benefits and payroll taxes are included in the labor costs. Initially, the mill would utilize bulk grains from Australia, which exports oats and barley in significant quantities at favorable prices. The costs shown for these grains (and for all materials) include freight to Guam. The production of mixed feeds is not limited to utilization of these grains, however. Others such as corn or maize, grain sorghum or milo, and wheat grain, middlings and bran may be used. If cereal grains were to be grown commercially on Guam, a substantial reduction in grain costs might be realized by the elimination of incoming freight charges. Copra meal and molasses would be obtained from the Philippines, and the premix and paper feedbags would be obtained from the United States. Some savings in cost might be realized if the bags could be obtained from a Japanese or other foreign source.

Fishmeal would come from the proposed tuna cannery, and sufficient mineral ingredients should also be available locally. The list of materials shown should by no means be regarded as restrictive with respect to either specific ingredients or proportions. It is intended to represent the composition of a typical high energy poultry ration for illustrative purposes only.

TABLE 21.—*Mixed feed mill: Annual operating costs and revenue*

EXPENSES	
Labor:	
Direct:	
Skilled (2, at $4,800)	$10,000
Unskilled (2, at $3,000)	6,000
Total direct labor	16,000
Indirect:	
Manager	14,000
Office (2, at $3,400)	7,000
Other—truckdrivers, etc. (4, at $3,400)	14,000
Total indirect labor	35,000
Total labor	51,000
Materials:	
Direct: [1]	
Oats (1,500 tons, at $76) [2]	114,000
Barley (1,500 tons, at $67) [2]	101,000
Copra meal (1,250 tons, at $88) [3]	110,000
Molasses (150 tons, at $53) [3]	8,000
Fishmeal (200 tons, at $175) [4]	35,000
Premix (200 tons, at $360) [5]	72,000
Minerals (200 tons, at $25) [6]	5,000
Bags (25 tons, at $300) [7]	8,000
Total direct materials	453,000
Indirect: (hand tools, repair parts, office supplies, tags, etc.)	5,000
Total materials	458,000
Fuel, water, and power:	
Electric power (200,000 kilowatt-hours, at 4 cents)	8,000
Fuel oil (20,000 gallons, at 10 cents)	2,000
Water (2 million gallons, at 50 cents per 1,000 gallons)	1,000
Total fuel, water and power	11,000
Depreciation:	
Structures (building and storage)—20 years	3,000
Equipment—10 years	6,000
Total depreciation	9,000
Other expenses:	
Truck operating costs [8]	2,000
Selling and administrative expense [9]	31,000
Total other expenses	33,000
Total expenses	562,000

See footnotes at end of table, p. 98.

TABLE 21.—*Mixed feed mill: Annual operating costs and revenue*—Continued

REVENUE		
Mixed feeds for laying hens (5,000 tons): [10]		
Mash (2,500 tons at $122)		$305,000
Pellets and crumbles (2,500 tons, at $124.50)		311,000
Total revenue		616,000
Profit on sales		54,000
Provision for Federal income taxes		19,000
Net profit		35,000
Margin on sales (pretax)	percent	8.8
Return on total investment (after tax)	do	19.1
Return on fixed capital (after tax)	do	26.3

[1] All costs are f.o.b. Guam, ingredients determined from reference 11.
[2] Source: Australia.
[3] Source: Philippines.
[4] Source: Guam tuna cannery.
[5] Source: U.S. Includes vitamins, trace minerals, biologicals, etc. "Animal Feed Pellets: S.I.C. 2042."
[6] Source: Guam. Includes limestone flour, oyster shell flour, etc. "Animal Feed Pellets: S.I.C. 2042."
[7] Source: U.S. Bags are three-thickness paper. "Animal Feed Pellets: S.I.C. 2042."
[8] "Animal Feed Pellets: S.I.C. 2042."
[9] Estimated at 5 percent of sales.
[10] Average U.S. price for laying mash (4m) plus allowance for freight to Guam ($8) that growers would have to pay for imported feeds. Crumbles and pellets sell for $2.50 more per ton than mash. "Animal Feed Pellets: S.I.C. 2042."

The revenues shown are based on the recent average U.S. price for laying mash in bulk. Since present feed users on Guam rely exclusively on imported feeds, the effective freight from the United States to Guam was added to reach a selling price for the Guam mill equal to current prices of imported feeds. Although half the sales of the mill are shown as being pellets and crumbles, this proportion is intended to be illustrative and may be varied to suit the actual market as it develops. It should be borne in mind that mixed feed milling has rather large attendant economies of scale, as was discussed above. Consequently, increases in the market for feeds will almost certainly reduce costs. The proposed mill is quite small compared with U.S. mills, which frequently have capacities on the order of 200 tons per 8-hour shift. Processing costs in these large mills are about $7 to $9 per ton,[11] whereas these costs are about $21 per ton for the initial production of the Guam mill. Substantial decreases in operating costs are attainable as volume is increased above the initial level because relatively small increases in capital and labor will produce significant increases in production.

d. Relationship to other developments

The feed mill occupies a pivotal position with respect to other facets of the agricultural industry. Its existence should encourage increases in the current level of egg production and serve as an inducement for broiler production. As these activities increase their levels of feed consumption, the cost of feeds will be reduced, further stimulating increased poultry production. The feed mill's demand for cereal grains should also encourage the growing of these grains on Guam. When grain production reaches commercial scale, the cost of feeds should again be lowered by the elimination of freight charges on the major portion of feed ingredients. Cattle raising, or particularly the

[11] Carrol White, Plant Superintendent, Ralston-Purina Co, Los Angeles, Calif.

feedlot fattening of cattle, would further increase the volume of the feed mill and permit additional economies of scale.

c. Conclusions

The importance of the feed mill to the economy of Guam is far greater than the creation of 11 jobs. The feed mill, if well managed, could be the foundation of an entire industry which (with the exception of egg production) is almost nonexistent in Guam today on a commercial scale.

References

1. "Grain and Feed Statistics Through 1961, Supplement for 1964," Statistical Bulletin No. 159 Revised. Economic Research Service, U.S. Department of Agriculture, March 1965.

2. "Feed Situation," FdS–209 (June 1965) and FdS–210 (August 1965). Economic Research Service, U.S. Department of Agriculture.

3. "Operating Costs in Packing Mixed Feeds," Market Research Report No. 658. Economic Research Service, U.S. Department of Agriculture, May 1964.

4. "The Changing Feed Mixing Industry," Marketing Research Report No. 506. Economic Research Service, U.S. Department of Agriculture, October 1961.

5. "Labor and Capital for Pelleting Formula Feeds," Marketing Research Report No. 463. Agricultural Marketing Service, U.S. Department of Agriculture, April 1961.

6. "A Small Country Elevator for Merchandising Grain—Designs and Recommendations," Marketing Research Report No. 387. Agricultural Marketing Service, U.S. Department of Agriculture June 1960.

7. "Labor and Capital for Mixing Formula Feeds," Marketing Research Report No. 564. Economic Research Service, U.S. Department of Agriculture, October 1962.

8. "Animal Feed Pellets: S.I.C. 2042," Industry Fact Sheets, Agency for International Development, U.S. Department of State, October 1959.

9. Carrol White, Plant Superintendent, Ralston-Purina Company, Los Angles, Calif.

10. "Custom Feed Milling in the Midwest—Model Plant Operations, Costs and Charges", Marketing Research Report No. 273, Agricultural Marketing Service, U.S. Department of Agriculture, 1958.

11. Letter dated October 5, 1965, Animal Husbandry Research Division, Agricultural Research Service, U.S. Department of Agriculture, Beltsville, Md.

3. EGG PRODUCTION

This industry is already well established, but sale prices are relatively high. More efficient operation and lowered feed costs would permit lower prices and expanded sales, especially to the military. Egg production could be a sideline in a larger, diversified farm operation.

4. PORK AND BEEF

Swine and cattle are now raised only on a semicommercial basis; large volumes of meat are imported (see table 10). A modern slaughterhouse and packing plant are essential to the development of the industry. These could not be feasible, however, on the basis of current livestock production practices because of unreliability of supply and quality. Commercial cattle growing and feeding operations are necessary, using advanced husbandry and range management practices integrated with feed grain (probably milo) production and feed lot finishing. With this assured basic supply, the finishing and packing enterprise can also provide a cash market for unfinished cattle produced by small or semicommercial operators. The same feed grain production, together with cooked military garbage and possibly some use of tuna cannery offal, will support a profitable hog-feeding enterprise. Even the feed mill might profitably be included in a large-scale integrated operation of this kind, which is probably the most promising type of agricultural venture available in Guam. Off-island management and capital are essential.

C. MANUFACTURING

Local production of industrial goods to substitute for imports from the mainland does not appear to have more than marginal significance in terms of development potential. Local assembly of cans to supply a tuna cannery will be feasible, and it may be possible to can small quantities of other items such as fruits and vegetables (or reconstituted beer, should it find market acceptance) for the local market. Local manufacture of brick and tile might be expanded somewhat. Furniture assembly for the local market has been under consideration by a major company. A small plastics plant producing parts for certain Headnote 3a industries and supplying simple containers and other more or less standardized but bulky items to the local market may turn out to be feasible. The Guam Economic Development Authority and other local instrumentalities for economic development should be watchful for such opportunities, but no conclusions as to the feasibility of particular enterprises can be reported here.

III. TOURISM

The introduction of jet aircraft in 1958 cut flying time across the Pacific by nearly 50 percent and started a tourist drive toward the Pacific and Far East region that has become more pronounced each year. Several countries in this area have had annual tourist increases of 20 percent, as shown in table 22. Guam, however, has not shared in this activity. There are no official tourism statistics for Guam.[22] Estimates for 1964 range from a few hundred to two thousand, but they all indicate that tourism is limited. Indeed, the small size of Guam's tourist business compared with that of other countries in the region suggests the presence of important obstacles.

The major barrier to tourist trade is the difficulty of access. Guam is proximate to the North Pacific sea routes, but few passenger ships dock there. The only direct air connections are with Manila and Honolulu. An additional drawback is the insufficient number and modest standards of basic hotel and restaurant facilities. At present, there are no first-class hotels, and the number of rooms available is barely enough for housing business and government visitors.

In spite of these difficulties, Guam has good tourist potential. Few long-distance tourists will travel thousands of miles to visit Guam, but they might be enticed to stop there as part of a tour that includes visits to other countries in the Pacific and Far East. The scenery, historical interest, and free-port status would be attractive to U.S. visitors, while Guam's position as the westernmost part of the United States has special appeal to tourists from the Pacific region.

The factors that will affect most strongly the development of a viable tourist business on Guam are discussed below. Emphasis is placed on the importance of establishing transportation linkages with potential markets. First, however, the effects of tourism on national income and employment are reviewed briefly.

TABLE 22.—*Visitors to Pacific destinations, 1958–64*

[In thousands]

	1958	1959	1960	1961	1962	1963	(Preliminary) 1964	Average annual percent change
Australia	61.5	68.1	84.6	99.4	111.4	126.0	142.0	15.1
China (Republic of)	15.5	17.6	30.8	34.8	44.6	61.3	85.0	33.7
Fiji	12.1	12.6	14.3	14.7	18.2	24.2	32.0	18.8
Hong Kong	103.0	148.6	165.6	220.9	253.0	265.3	304.1	23.4
India	92.2	109.5	123.1	139.8	154.3	140.8	160.0	9.8
Japan	152.2	182.0	212.3	248.6	278.3	305.5	360.0	15.4
Korea	7.9	8.0	8.7	11.1	15.2	22.1	26.4	22.9
Macau	7.8	20.3	22.3	26.4	26.9	32.0	46.0	40.4
New Caledonia	5	9	1.4	2.8	3.6	4.9	5.2	50.8
New Zealand	59.3	67.1	71.6	91.4	92.7	107.9	124.0	13.3
Philippines	30.8	44.4	50.6	57.2	62.4	69.8	74.3	15.5
Samoa (American)	7.7	8.3	11.2	1.0	1.5	1.8.1	9.9	
Singapore	73.8	77.4	90.1	101.6	109.2	109.7	90.0	4.0
Tahiti	4.4	4.7	6.1	8.5	11.0	14.4	14.7	38.7
Thailand	55.2	61.6	81.3	107.7	130.8	165.1	224.0	27.0

[1] Represents change from prior years in basis of defining or counting visitors.

Source: Pacific Area Travel Association.

[22] The need for accurate statistics in the development of a tourist business cannot be overstated. Guam should start immediately to collect data by requiring entry cards such as those now used in Hawaii.

A. Impact of Tourist Expenditures

Money spent by tourists continues to circulate through the economy—the greater the turnover, the greater the impact on the economy. The magnitude of this multiplier effect varies among countries, but its limits have been estimated. In a study for the U.S. Department of Commerce, models were constructed which simulated tourist expenditure flows in different types of economies.[23] In countries where there are substantial leakages, tourist money turns over from 3.2 to 3.5 times a year before it disappears. More highly developed economies with comparatively lower imports have annual multipliers of about 4.3.

Tourist expenditures are divided typically as follows:[24]

Category:	Percent
Accommodations	25
Food and beverages	32
Purchases	25
Sightseeing and amusement	10
Local transportation	5
Other	3

The manner in which money spent on each of these categories is distributed can be broken down. The first stage is always the outlay by the tourist. In the second step, a tourist's expenditure for accommodations, for example, is divided among wages and salaries; administrative expenses; repairs and maintenance; depreciation; and so forth. These moneys are further allotted. In the third stage, the money first given for wages and salaries is spent on rent and food; while the fees for repairs and maintenance are divided among wages, supplies, and profits. Leakages will also occur within the system. The tourist's money will disappear after 13 or 14 stages, but only 5 or 6 transactions usually occur within the first year. For a country with heavy leakages (such as Guam), the following annual turnovers were estimated for the first five transactions:[25]

	Annual turnover per unit of money
Accommodations	3.4
Food and beverages	3.3
Purchases	3.1
Sightseeing and amusement	3.4
Local transportation	3.0
Other	3.0
Total	3.3

Each $100 spent by tourists will thus provide $330 in national income during the same year. The multiplier for all 13 transactions is 3.5.

The impact of tourist expenditures on employment can be assessed using the multiplier analysis. The contribution to wages and salaries of tourist spending can be taken from the decomposition of expenditures that was outlined above. About 23 percent of the national income that is generated by tourist spending goes for wages and salaries; slightly less than half this amount is paid to those whose jobs are directly related to tourists (i.e., those who receive wages

[23] Harry G. Clement, "The Future of Tourism in the Pacific and Far East," Government Printing Office, Washington, D.C. (June 1961), pp. 18-36.
[24] Taken from Hawaii Visitors Bureau data and from Mr. Clement.
[25] Clement, op. cit.

in the second transaction). In a high-leakage economy, therefore, each $100 spent by tourists will yield $75 in wages.

The number of jobs that will be created by tourism, or conversely the number of tourists needed to support a given level of employment, can be estimated if the average annual wage of persons employed in business created by the turnover of tourist expenditures and the average outlay by tourists are known. If the average salary of Guam is $3,000 per year, $3 million in wages must be provided annually to sustain 1,000 jobs (460 would be directly associated with tourism). Assuming that the average tourist spends $100 during his stay on Guam, 40,000 tourists per year would be needed to support this level of employment.

B. The Tourist Market

Currently, international tourists from the Pacific and Far East comprise a small proportion of total visitors to the Pacific region. This is understandable, as few of these nations have annual per capita incomes that exceed $1,000. Three, however, do generate considerable travel activity. These are Japan, Australia, and New Zealand. To a certain extent, their travel is limited; for example, Australia is the principal source of tourism for New Zealand, while Fiji and New Caledonia depend heavily on New Zealand. But more extensive trips are becoming popular as affluence increases and air connections improve.

There are no entirely satisfactory statistics on Japanese tourists, but the passport data provided by the Foreign Office give a good indication of the numbers of travelers and trends. In 1964, 114,000 passports were issued—a 26-percent increase over 1963.[26] Most travel is for business purposes, but pleasure trips have increased substantially since the relaxation of travel restrictions in April 1964. For many years, the United States has been the most popular destination of the Japanese traveler (although only about 55 percent went further east than Hawaii), but it appears to have been overtaken by Okinawa during the last months of 1964.[27] Hong Kong and Taiwan are the other leading destinations. Intraregional pleasure travel should continue to increase at a rapid rate. Although about half of the potential Japanese tourists express a desire to visit the United States, the cost for many is prohibitive because of the long distance involved. This suggests that package tours such as Okinawa-Hong Kong-Taipei-Guam, if properly promoted, would have substantial appeal.

Over 90,000 Australians went abroad on vacation last year, a 20-percent increase over 1963.[28] New Zealand, New Caledonia and Fiji were the most frequent destinations, but trips to the Far East gained in popularity. About 5,000 visited Japan, usually via the Sydney-Manila-Tokyo air route. If direct air connections were established between Sydney and Tokyo, with a stop at Guam (as discussed in the next section), a number of travelers between Australia and Japan could be attracted to visit Guam on one leg of their

[26] Japan Foreign Office data, from 1964-65 issues of Air News Japan.
[27] Air News Japan, vol. V, No. 4 (Jan. 25, 1965), p. 3.
[28] Pacific Area Travel Association.

journey. An Australian cruise ship of the Pacific and Orient Lines docked at Guam in March 1965, and the passengers expressed a high level of satisfaction with their brief visit. Plans are now being made to include Guam as a port on a regular basis.

The principal travel market for the Pacific and Far East is the United States, which provides more tourists than any other single country. The number of U.S. visitors to this area has increased an average of 15 percent yearly, as shown in table 23. Since 1950, the number of tourists to the Pacific region has remained a relatively constant proportion of total U.S. tourists, but passport data for 1965 indicate an increase in the proportion of people listing countries in the Pacific and Far East as a destination.[29]

TABLE 23.—*U.S. citizens departing to foreign countries, total and for Pacific region, 1958–64 (years ending June 30)*

Year	Total departures	Departures to Pacific region
1958	1,402,000	95,000
1959	1,739,000	96,000
1960	1,934,000	121,000
1961	1,969,000	138,000
1962	2,160,000	176,000
1963	2,421,000	198,000
1964	2,709,000	218,000

Source: Immigration and Naturalization Service, U.S. Department of Justice.

The most popular countries for U.S. tourists are presented in table 24. Japan has been the primary destination for several years. (The majority of transpacific flights between the United States and Asia schedule Tokyo as the first Far Eastern stop.) About 75 percent of U.S. visitors to Tokyo continue to Hong Kong, often via Taipei. From Hong Kong, 30 percent return to the States, while most of the rest travel to Bangkok and others continue to Singapore. The return trip is either via Manila or Hong Kong and Tokyo. These touring routes could readily accommodate Guam as a stopover on the return trip, providing of course that there are adequate connections. There would be no additional cost since a round trip ticket from the United States with Hong Kong, Bangkok, or Singapore as the turnaround point allows a stop at Guam en route.

[29] U.S. Department of State, "Summary of Passport Statistics," April 1965 table 4.

TABLE 24.—*U.S. citizens visiting Pacific destinations in 1963 and 1964 (in thousands)*

	1963	1964	Rank in 1964	Percent U.S. visitors of total, 1964
Australia [1]	20.0	24.0	7	15
China (Republic of)	33.3	40.0	4	54
Fiji	6.0	6.5	14	20
Hong Kong	103.6	114.0	2	29
India	39.3	44.5	5	28
Indonesia	4.0	7.0	13	47
Japan	160.0	198.0	1	55
Korea	10.0	12.0	10	43
Macau	8.3	10.0		22
New Caledonia	.3	.3	15	6
New Zealand [2]	12.6	18.0	9	22
Philippines	36.5	39.0	6	53
Samoa (American)	7.4	9.0	12	90
Singapore	15.4	19.0	8	21
Tahiti [3]	9.0	9.0	12	64
Thailand	55.3	62.0	3	28

[1] Includes cruise passengers.
[2] Refers to visitors remaining 5 days or longer.
[3] Excludes cruise passengers, estimated at about 7,000 each year.

Source: Pacific Area Travel Association.

The cultivation of the regional markets, especially Japan and Australia, might provide the most immediate results, but the U.S. market must also be developed. Because of the time involved in planning tours, there would be a lag of a few months before any significant increase in U.S. tourists would occur. However, the United States is the richest source of tourism for the Pacific area, and by all indications it will continue to be the primary market for years to come. The use of Guam as a base of operations during the present Vietnamese activity will probably tend to discourage U.S. tourism, but this should have little permanent effect. In 1958, Taiwan was considered to be the least safe country in the Far East by potential U.S. tourists.[30] By 1960, U.S. tourism had surged, and in 1964 Taiwan was the fourth most frequently visited country in the Pacific area.

There is yet another source of tourism for Guam—the local military population. There are over 3,000 military families based on the island who would enjoy and support good hotels, restaurants, parks, and other sports and entertainment facilities. The extent of their participation is difficult to assess, but many have indicated interest in utilizing such facilities if they become available.

C. Transpacific Travel and Costs

International tourism in the Pacific region depends heavily on air transportation because of the great distances that are involved. In 1964, 92.5 percent of U.S. citizens visiting the region traveled by air; and in the first quarter of 1965, 95 percent went by air.[31] Slightly lower proportions hold for Australian and Japanese tourists. Ship travel still accounts for a significant share of intraregional travel, and cruise ships remain popular particularly with elderly and retired

[30] Clement, op. cit.
[31] U.S. Department of State, "Summary of Passport Statistics," April, July, and October 1964, and January and April 1965.

people; but the establishment of effective air connections has primacy for the development of tourism in Guam.

Today, Guam is served by three airlines, but only Pan American Airways provides international service. There are three flights each way per week, connecting Guam with Manila and Honolulu and furnishing 40,872 passenger seats per year. In 1964, Guam-destined or Guam-originating passengers totaled 19,000—about 30 percent of all passengers served on this route.[32] The overall load factor is about 77 percent, but the experience of the authors indicates that it is much higher on the Honolulu to Guam and Guam to Honolulu segments. On the former, in particular, reservations may be required several weeks in advance, and pleasure tourists risk losing their reservations to higher priority military and other Government travelers. This situation has prompted Pan American to schedule an additional weekly flight to service San Francisco, Honolulu, Guam, and Saigon, commencing in early 1966.

More flights on this route (or at least on sections of it) may be warranted even after the additional flight is operating, but these alone will not be sufficient to increase accessibility. Clearly, other major cities must be directly linked with Guam. PAA has authority to operate between Guam and Tokyo as part of their flight from Los Angeles or San Francisco and Tokyo. However, a Civil Aeronautics Board decision permits the stop at Guam to be omitted,[33] and Pan American does not appear interested in serving this route.

Two other airlines have expressed interest in establishing new connections with Guam. The Civil Air Transport airlines of the Republic of China hopes to begin weekly passenger service from Taipei by the end of 1965.[34] This flight would give travelers from the island a link with twice-daily flights from Taipei to Hong Kong and the daily connections with Tokyo. Quantas airlines is investigating the possibility of establishing direct service between Sydney and Tokyo, with a stop at Guam. The present traffic between these two points makes this a marginal operation, but estimates of future flows show that this route may soon be profitable. The addition of these routes would link Guam with the major tourist flows in the Pacific area.

There is another problem associated with Pacific air travel in addition to the limitations on connections. Travel in this area is a relatively expensive operation. There have not yet been any reductions in air fares comparable with the lowering of rates on the North Atlantic. This is an important favor. For example, U.S. tourists tend to measure a trip to other regions against the cost of getting to Europe.[35] There was a rate cut in 1960, but today an open rate situation appears to exist. The CAB has been pressing for a 15-percent reduction, stating that the profit position of PAA and Northwest Airlines (the two U.S. carriers that serve the most important North Pacific routes) on their Pacific flights has been excessively high.[36] PAA made 23.3 percent in fiscal 1964, and Northwest realized a 21.8 percent rate of return during that year. The carriers have not acted to reduce fares, prompting the CAB to seek legislation permitting it

[32] Interview with William Snyder, Pan American Airways representative, Guam.
[33] CAB order E-20181, effective Nov. 23, 1963.
[34] "CAT Airlines Expects to Serve Guam," Guam Times Weekly, Sept. 18, 1965, p. 9.
[35] Clement, op. cit.
[36] Richard G. O'Lone, "Legislation is Key to Pacific Fares," Aviation Week and Space Technology, Dec. 21, 1964, p. 29.

to set international rates.[37] Although it is difficult to estimate the price elasticity of demand for Pacific travel, the boost in travel that would arise from such a rate reduction should be substantial, based on the effects of rate adjustments on the North Atlantic routes.

Some concern has been expressed regarding the effects of supersonic aircraft on the tourist position of Guam. The first liners, which will be introduced in the early 1970's, will have shorter ranges than today's jets, thus not affecting Guam's situation. The later supersonic liners should have far greater ranges, but this does not preclude their being efficient on relatively short segments. Indeed, distances from Guam to the major cities of the Pacific region (1,499 miles to Manila, 1,352 to Tokyo, and 3,318 to Honolulu) should be well over the minimum distances for economical supersonic aircraft operation.

D. Basic Tourist Facilities

Airport terminal facilities on Guam are presently inadequate, but a new terminal under construction should correct this situation. Existing hotel accommodations are modest by U.S. standards, and none provide an adjoining bar and/or restaurant. At present, there are approximately 60 units, but all are usually occupied by business and Government travelers. Several motels are being built, and up to 75 new units should be available soon. These new facilities will have complete air conditioning and other modern facilities, but none appears to qualify as a first-rate tourist facility. Plans to build a beach resort hotel at Tumon Beach by the Hilton Hotels have been temporarily shelved. Since the difficult process of land assembly has been completed, the government of Guam should make whatever alternate arrangements are necessary to carry the project to completion. Additional construction should wait until the success of presently available and planned facilities can be determined by experience.

E. Tourist Attractions

The improvement of scenic areas and shopping facilities is vital to the development of tourism. The existing sightseeing attractions need to be expanded and enhanced, and new attractions should be devised that take into account tourist interest in local history and customs as well as scenery. Two developments that were recently suggested by the National Park Service would combine these areas of interest.[38] They proposed the establishment of a park to illustrate World War II in the Pacific, with particular emphasis on the capture and liberation of Guam. A museum would be constructed overlooking Asan invasion beach, and several detached units would be placed at vista points, Japanese tunnels, burial sites, and United States and Japanese tanks still in place. All these could be reached by visitors using existing roads or easy trails.

Another park would provide a wide range of seashore recreational activities and exhibits of the early history of the native Chamorros and of their discovery and conquest by the Spanish. The park would cover 22,000 acres that extend northward from the southern tip of the island along the west coast. The villages of Merizo and

[37] Legislation to grant CAB this authority was passed by the Senate Commerce Committee during the 88th session but was not acted upon by the House.
[38] National Park Service, *Guam Study*, June 1965.

Umatac are located within the proposed boundaries. Facilities for beachcombing, scuba diving, swimming, waterskiing, and fishing would be furnished. The park would be accessible by scenic roads and overlooks and extensive nature trails.

Currently, it is difficult for visitors to get around the island. There are good tour services available, but public transportation is recommended so that tourists could return to areas of interest for more intensive sightseeing.

Shopping, if properly developed and advertised, could become an important tourist attraction. The free-port status of Guam allows articles to be offered at prices substantially below those in the United States and Australia and (in many instances) at lower prices than in Hong Kong and Tokyo. Cameras, chinaware, and watches are particular bargains. The main drawback for visitors is the great distances between stores. Efforts should be made to group stores in a general area easily accessible to tourists. The current duty-free allowances for U.S. tourists returning from territorial possessions might be sufficient inducement for some to stop at Guam on their return from the Pacific region. There is a standard $100 exemption for returning tourists, but those coming from a possession may bring back $200 worth of duty-free goods. A traveler can purchase half of the $200 duty-free allowance in other countries, so long as he buys the other half in Guam. If this allowance could be raised, say, to $400 for a period of time, it seems likely that substantially more returning U.S. tourists would be attracted to Guam. The dollar outflow would probably be little affected by the additional goods sold, because U.S. dollars otherwise spent for tourist services abroad would be diverted to Guam. But there is evidence that even the $200 allowance could be successfully exploited. In the Virgin Islands between 1960 and 1962 (the $200/$100 allowance was in effect, although it applied to the wholesale value rather than retail prices of goods purchased), the number of tourists increased by 39 percent, while tourism in all adjacent areas rose only 11 percent. Existing evidence points to the exemption as the prime reason for this difference.[39]

F. Guam as Gateway to the Trust Territory

An additional impetus to tourism on Guam would be the opening of the trust territory to tourists. These islands are relatively primitive and might have idyllic appeal to many travelers. Even today, Japanese tourists have expressed interest in visiting them but have been hampered by restrictions on free travel. All who desire to visit the trust territory must obtain permits from the trust territory administration, a process which takes about 6 weeks. However, if these restrictions are lifted, Guam will be the base from which tourists would travel to the islands.

[39] Marcia Harrison, "Effect of Special $200/48-Hour Customs Exemption on the Economy of the Virgin Islands." Prepared for Office of Territories, U.S. Department of the Interior, Feb. 18, 1964.

IV. OTHER SERVICES

Included in this category are all export activities not involving the production of goods (except for tourist services, which have been treated separately). Guam is already, from this point of view, overwhelmingly a service-producing economy (if the sale of labor services to the Federal Government is counted). And considering its competitive disadvantage and limited potential for developing exports of goods, it is natural to look to the service sector for further export possibilities. The private portion of this sector is by all normal standards underdeveloped at present and does not adequately fill even local needs. This does not by itself negate the vision held by some of Guam as a major American service-exporting center at some future time. All-important, however, is the question of how far in the future.

A. Trade, Distribution, Administration, and Finance

This loosely related complex of activities centers around the concept of Guam as a regional headquarters for international buying and selling activities; warehousing and physical distribution of goods in international trade; supervision of Far Eastern activities of U.S. corporations; insurance underwriting; and commercial and investment banking. It is an exciting vista; unfortunately, it does not square with the obvious locational affinities of such activities.

The two attractions that Guam can offer such industries are (1) the fact that Guam is U.S. soil and under the protection of the laws of the United States, and (2) possible tax advantages through the abatement powers granted to the Guam Economic Development Authority. On the debit side, it must be pointed out that these are market-oriented and supply-oriented industries, usually found only in the larger population centers where maximum interaction is achievable between large numbers of sellers and customers or buyers and sources of supply; where concentrations of shippers and receivers create external economies and economies of scale in transportation; where a great range of specialized ancillary services is available; where a large variety of skilled and specialized clerical and technical employees can be obtained; and where a high level of amenities exists to serve an affluent and demanding business class. Guam is too small and too remote from major market and supply areas to justify plans in this area for the foreseeable future. Time enough, when the more pressing immediate needs have been met, to reexamine the concept.

B. Services to the Military

Military markets for local services are of two main types: (a) marketing services (i.e., regular commercial wholesale and retail functions reflected in the markups of goods purchased in local stores); and (b) business, repair and personal services.

In category (a), the significant items are consumer goods. The military in Guam purchases other types of supplies and equipment locally, and would purchase more if a wider variety were stocked by local vendors, but the demand for these items is so sporadic and unpredictable that it would usually be uneconomical for local suppliers to import and carry stocks for such contingencies. As to consumer goods, there are frequent complaints from the civilian business community that the commissary stores and base exchanges represent unfair competition and that more of the patronage of these stores should be diverted to local civilian merchants. Such complaints are justified insofar as they apply to unauthorized civilians who make extensive use of the military stores, whether directly or indirectly through authorized personnel. The practice is so widespread and of such long standing, however, that it is possible to infer that there are some civilians who say one thing and do another. Doubtless a boost would be given to civilian retail sales if patronage of the military stores were confined strictly to the personal needs of authorized military and civil service personnel, and certainly this should be done. That this would have a significant effect on employment seems unlikely since it would result merely in a shift of employees from military to civilian stores.

Business, repair, and personal services, in contrast, represent an area in which the military are more than willing to purchase more and better services from local vendors but in which, as with agricultural products, the supply side is not as responsive as it might be. Local merchants are reported to show little initiative in selling their products and services to the military and must often be induced to offer desired items at required standards. This does not qualify as a generalization because substantial amounts of goods and services from local sources are sold to the military, and certain local businessmen have on occasion aggressively pursued and obtained military business. Nevertheless, military supply and procurement personnel were generally insistent that substantial increases of local purchases would be made if local supplies were forthcoming. Restrictions on the prices that may be paid by the military locally by no means cover all goods and services. Equipment and machinery repair services and building and grounds maintenance services are two general categories where the military appears particularly interested in making additional local purchases.

In order to exploit the military market further, the civilian economy's greatest need is for entrepreneurs who want to supply it. The latter, in turn, are handicapped mainly by unavailability of qualified labor. For a private economy as small as Guam's, serving a military market so large and diversified in its needs, however, ready availability of any of a wide variety of goods and services at the times and in the quantities that are required will always be difficult.

Table 25, showing Air Force purchases in the second half of 1964, gives an idea of the quantities and kinds of items already purchased locally and also of those where additional local production might be appropriate.

TABLE 25.—*Air Force purchases by item and source of supply, July–December 1964*

Item	Local	Navy	Zone of Interior [1]	Foreign
Finance (disbursed by finance officer):				
A. & E. services	$158, 284	87, 300		
New construction	246, 228			
Repair storm drainage and utility system	428, 436			
Repair and painting buildings	182, 964			
Airfield surface repair	277, 612			
Repair other facilities	68, 722			
Rental of CE equipment	2, 880	6, 878		
Ready mix concrete	2, 686			
Custodial service	53, 720			
Packing and crating	24, 744			
Tire recapping	12, 884			
Automotive equipment repair	8, 880	69, 700		
RCA tolls	4, 268			
Guam College and education	31, 612			
Commissary resale purchases	316, 120	1, 613, 916		
Ice	7, 604			
Class "M" maintenance		191, 884		
Utilities, electricity, water		1, 168, 020		
Other equipment repair		24, 576		
Furniture repair		52, 840		
Printing		10, 220		
Stevedoring		79, 604		
Apprentice training		8, 228		
NCO's open mess:				
Food items				
Dairy products	11, 796			
Commissary	2, 372			
Base exchange	59, 064			
Decorations	1, 868			
Officers open mess:			1901	
Entertainment				
Food	3, 154			64, 253
Supplies	55, 100	1, 664	103, 892	
Maintenance and repairs	1, 050		3, 632	1, 732
Furniture and equipment	1, 623			
Medical group	1, 998		41, 000	
Drugs, medical supplies				
Nonmedical supplies	34	74	47, 091	
Equipment	70	1, 056	16	
Resale and troop issue—Commissary	2, 235		702	
Perishable troop issue				
Nonperishable troop issue		170, 963		
Perishable chill, resale			45, 468	
Perishable freeze, resale			65, 250	
Sensitive chill (produce), resale			192, 700	
Precooked inflight frozen meals			90, 000	
Perishable for resale and clubs			4, 365	
Nonperishable brand name, resale		315, 909		
Bread, milk, vegetables, troop and resale	158, 161		523, 864	
Base exchange				
For resale				
Food	384, 675		2, 819, 337	436, 729
Service	314, 026		119, 687	
Supplies	174, 900			
Operation	21, 807		115, 694	3, 980
Central base fund	48, 681		394, 403	
Insurance				
Other personnel services	1, 920			
Expendable property	10			
Property repairs	14, 055	10, 967	4, 847	
Food and beverages	3, 887	190	552	
Supplies and services	283	3, 179		
Other material services	47	322		
Other installation services	995		6, 177	
Entertainment	821	1, 010		
Other professional services	137	694		
Prizes	1, 626	1, 220		
Nonexpendable property	720	851	21	
	21, 961	4, 704	10, 334	

[1] Essentially the U.S. mainland.

TABLE 25.—*Air Force purchases by item and source of supply, July–December 1964*—Continued

FSG	Description	Local	Zone of Interior [1]	Other
10	Weapons		$408.21	
15	Aircraft and airframe structural components	$11.00		
16	Aircraft components and accessories		493.50	
17	Aircraft handling equipment	3,088.00	32.55	
19	Ships, small craft, and accessories	3,000.00		
24	Tractors		541.17	
25	Vehicular equipment components	334.89	47,086.45	
26	Tires and tubes	2,117.00	10,577.22	
28	Engines, turbines, and components	8.48	4,733.46	
29	Engine accessories	713.76	40,835.91	
30	Mechanical power transmission equipment	22.62	2,496.44	
31	Bearings	67.66	4,362.15	
32	Woodworking machinery and equipment	34.00	336.00	
34	Metalworking machinery	114.25	7,741.61	
35	Service and trade equipment	42.00	22,109.68	
36	Special industry machinery	13.50	3,303.59	
37	Agricultural machinery and equipment	950.96	17,599.54	
38	Construction and highway maintenance equipment	175.80	1,555.85	
39	Material handling equipment		5,031.99	
40	Rope, cable, chain, and fittings		3,490.14	
41	Refrigeration and air-conditioning equipment	9,118.80	24,078.88	
42	Firefighting and safety equipment	731.16	4,284.15	
43	Pumps and compressors	180.00	1,270.09	
45	Plumbing, heating, and sanitation equipment	801.93	44,504.17	
46	Water purification and sewage treatment equipment		160.67	
47	Pipe, tubing, hose, and fittings	1,033.22	27,055.47	
48	Valves	535.80	5,203.67	
49	Maintenance and repair shop equipment		10,582.75	
51	Hand tools	26.20	15,104.41	
52	Measuring tools		855.87	
53	Hardware and abrasives	43.73	40,678.24	
54	Prefabricated structures and scaffolding		570.80	
55	Lumber	6,625.89	42,376.06	
56	Construction and building materials	5,704.05	61,120.65	
58	Communication equipment	94.70	2,253.05	
59	Electrical and electronic components	36.41	88,077.58	
61	Electric wire and power and distribution equipment	667.11	21,385.83	
62	Lighting fixtures and lamps	4,899.50	34,596.08	
63	Alarm and signal system		50.54	
65	Medical, Dental equipment and supplies		1.08	
66	Instrument and laboratory equipment	9,486.46	5,997.73	
67	Photo equipment	3,771.70	128,730.58	
68	Chemicals and chemical products	55,647.50	28,275.80	
69	Training aids and devices		3.62	
71	Furniture	26.00	100,428.01	
72	Household and commercial furnishings and appliances	362.00	30,486.34	
73	Food preparation and serving equipment	26,202.28	29,923.03	
74	Office machines and data processing equipment		1,509.55	
75	Office supplies	10,564.74	37,862.31	
76	Books, maps, and other publications		1,171.25	
77	Musical instruments, photographs, equipment	853.05	208.03	
78	Recreational and athletic equipment		6,860.58	
79	Cleaning equipment and supplies	320.64	20,362.33	
80	Brushes, paints, sealers, and adhesives	1,711.25	82,673.95	
81	Containers, packaging, and packing supplies		15,565.02	
83	Textiles, leather, etc		5,476.69	
84	Clothing and individual equipment	729.14	21,247.50	
85	Toiletries	1,297.90	7,430.32	
87	Agricultural supplies		205.79	
88	Live animals			$69.5
89	Ice	2,758.40		
91	Fuels, lubricants, oils, and waxes	58,513.11	5,208.46	
93	Nonmetallic fabricated materials	57.90	10,693.51	
95	Metal bars, sheets	646.80	11,984.04	
96	Ores, minerals		3.20	
99	Miscellaneous		2,237.34	
	Total	214,151.45	1,162,702.27	69.5

[1] Essentially the U.S. mainland.

SOURCE: June 16, 1965, letter from Brig. Gen. Harold W. Ohlke, commander, U.S. Air Force Headquarters, San Francisco, Calif.

PART 3—APPENDIXES

APPENDIX 1—POPULATION, LABOR FORCE, EMPLOYMENT, AND INCOME

A. Population and Labor Force

1. RECENT STRUCTURE

For a small community, Guam has an unusually complex population. Indeed, it is difficult to speak of the population of Guam, for there are several more or less discrete populations, each with its own set of characteristics and each subject to a different set of influences. Census data for 1940, 1950, and 1960 (see table 1) show that the indigenous Chamorro population (which nearly doubled in size from 1940 to 1965) is the largest of these subpopulations and the most "normal" in its composition and growth pattern. Next largest is the Caucasian (mainly "stateside") component, comprised largely of military and Federal civil service personnel and their dependents, but including also persons supported by employment in private business or with the government of Guam. This is followed by a Filipino category that is dominated by alien contract workers in Guam on a temporary basis, but in which permanent resident aliens and naturalized citizens and their dependents are increasingly important. "Other" is a heterogeneous category, including a heavy sprinkling of U.S. military personnel and other U.S.-born persons as well as a substantial number of persons from the trust territory and other foreign born. Because of the military and contract or migrant labor influences, the Filipino, white, and "other" populations are rather heavily concentrated in the adult male brackets and are notably unstable in size. Both the white and Filipino populations have undergone changes since the early 1950's which have offset some of the growth in the Chamorro population.[1]

TABLE 1.—*Population of Guam at census years*

	Chamorro	White	Filipino	Other	Total	Military	Foreign born
1940							
Male	9,989	861	127	389	11,366		
Female	10,178	344	248	350	19,620		
Total	20,167	785	375	739	32,386	490	176
1950							
Male	13,403	18,245	1,068	1,243	46,885		
Female	13,721	4,672	249	371	19,013		
Total	27,124	22,920	1,317	2,110	59,498	18,600	8,639
1960							
Male	19,881	14,105	2,472	1,730	38,211		
Female	17,881	5,022	1,110	1,230	27,843		
Total	37,762	20,124	3,582	2,958	67,044	18,944	9,639
Military	233	7,212	79	687	8,705		
Foreign born	993	806	2,091	347	9,639		

[1] Estimated.
[2] Not given.
[3] The middle figures are from different portions of the U.S. census. The discrepancy is not explained.

[1] The racial designations are those of the U.S. Census Bureau and are used by the government of Guam as well. They are impossible to avoid in discussing the population and labor force of Guam. It should be needless to say that no other significance attaches to them.

Table 2 contains 1960 census data on household and family characteristics which remain more or less representative in 1965. Alien contract workers and U.S. military personnel housed in barracks on military bases accounted for most of the 11,900 persons living in group quarters, leaving 55,100 persons in households. Additional persons living in households—military families and Federal civil service employees and dependents—also resided on the military bases, bringing the total base population to about 23,000.

Average household and family size is relatively large in the Chamorro and other components. Large numbers of children and inclusion of subfamilies and other relatives are typical of Chamorro households but less prevalent in the other groups. Over 10 percent of the Chamorro married couples in 1960 lived in households other than their own.

Table 2 also shows that Chamorro and other wives substantially outnumbered Chamorro and other husbands. Among white and Filipino married couples, on the other hand, the opposite was true. It is assumed that the excess Filipino husbands were married mainly to Guamanian wives and that the excess white husbands were married to Guamanian and other wives. The deficit of Chamorro husbands presumably reflects net outmigration of young Chamorro men during 1950–60. Marriages of Chamorro women to white husbands in the military also result in their eventual outmigration (together with their children), but the amount is obviously smaller. Such outmigrations have kept the increase of the Chamorro component smaller than fertility rates of Chamorro women would suggest. Taking into account this net outmigration (of uncertain magnitude, however), the rate of natural increase of the Guamanian or Chamorro population has surely been among the highest to be found anywhere.

TABLE 2.—*Household and family status, 1960*

	Chamorro	Filipino	Other	White	Total
Population in group quarters	277	5,827	622	5,178	11,904
Population in households	34,485	2,753	2,356	15,546	55,140
Number of households (by head)	5,212	695	494	4,429	10,830
Primary families (by head)	4,926	502	440	4,244	10,202
Wife of head	4,394	246	513	3,736	8,889
Children of head under 18	17,000	1,367	1,026	7,058	26,541
Other relative of head	7,421	290	168	223	8,102
Total	33,831	2,405	2,147	15,261	53,734
Married couples (living in same household)	4,228	619	420	4,175	9,442
Without own household	438	65	10	40	553
With own household					
Head	3,790	554	410	4,135	8,889
Wife of head	4,394	246	513	3,736	8,889
Population per household	6.62	3.96	4.77	3.51	5.09
Population per primary family	6.84	4.22	4.88	3.66	5.29

The age-sex structure of the subpopulations in 1960 (presented in table 3) indicates that the Chamorro population, unlike the other three, is statistically dominated by children and women. Only 39 percent of the Chamorro population was 20 years old or more; and of this adult group, 55 percent were females. Of the white population, 60 percent were adults and, of these, 33 percent were females. The corresponding percentages for the Filipino population were 82 and 5 percent, respectively. The sex compositions of the minor populations were approximately in balance in each case. Note, however, that Chamorro children in the under 5 age group alone accounted for 19 percent of the total Chamorro population. This group was 2.12 times as large as the 15 to 19 group, indicating that the latter group in 1975 will be at least double its size of 1960. The under 5 Filipino and other age groups are also relatively heavily populated, adding nearly one-fifth more to the Chamorro group.

TABLE 3.—*Population by race, age, and sex, 1960*

	Chamorro		Filipino		Other		White		Total
	Male	Female	Male	Female	Male	Female	Male	Female	
Under 5 years	3,422	3,158	377	369	249	229	1,566	1,454	8,020
5 to 9 years	3,024	3,089	265	266	147	184	1,157	1,062	2,239
10 to 14 years	2,716	2,627	108	109	102	89	759	744	1,503
15 to 19 years	1,569	1,534	52	28	138	85	1,294	294	1,388
20 to 24 years	1,020	1,334	96	28	300	111	3,051	744	3,705
25 to 29 years	867	1,084	830	74	235	163	1,456	995	2,319
30 to 34 years	936	1,008	2,251	90	170	153	1,169	840	2,959
35 to 39 years	703	940	1,494	71	155	98	1,068	702	1,760
40 to 44 years	591	757	840	32	85	61	656	381	1,087
45 to 49 years	543	647	715	20	61	38	365	254	619
50 to 54 years	467	543	309	12	35	10	238	135	370
55 to 59 years	372	444	91	5	14	6	165	74	239
60 to 64 years	245	296	21	2	5	3	96	27	123
Over 65 years	406	570	21	4	12	2	47	26	73

These facts have obvious implications for the future labor force and/or outmigration. (The number of white children has less economic significance because of the rapid turnover of military families, although it is a major factor in public education.) Table 4, showing labor force status in 1960, demonstrates that labor force participation rates of the 14-and-over Chamorro population are unusually low, both for males and females. This is true not only in comparison with the other populations in Guam (which are abnormally high) but also relative to the United States as a whole and for every age group in both sexes, especially in the over 44 and under 24 components for men and the over 44 component for women. Despite the apparent very low 1960 (and probably current) rate of unemployment, it is doubtful that the Chamorro population can continue to support disguised unemployment in the form of nonparticipation in the labor force in the absolute amounts implied by recent participation rates in conjunction with rapid population growth. It is assumed, therefore, that labor force participation rates will rise.

TABLE 4.—*Labor force status, 1960*

	Male				Female			
	Chamorro	Filipino	Other	White	Chamorro	Filipino	Other	White
Population, 14 or over	8,213	6,735	1,272	9,732	9,533	377	731	4,433
Armed Forces	253	73	684	7,670			3	42
Civilian labor force	5,257	6,513	448	1,673	2,110	160	209	1,229
Percent unemployed	3	0.2	2	2	3.9	4.4	3.7	6.4
Not in labor force	2,723	149	140	389	7,423	217	519	3,162
Inmate of institution	82	10	3	3	36	2		1
Enrolled in school	1,654	80	106	312	1,559	31	85	292
Other								
Under 65	790	49	25	56	5,282	180	432	2,844
65 or over	197	10	6	16	544	4	2	25
Married, spouse present					4,881	253	530	3,758
In labor force					834	83	159	957
Percent					17.2	32.8	30.4	25.4
Percent of population, 14 or over, in labor force								
Total	66.8	97.8	89.0	96.0	23.1	42.4	29.0	28.7
14 to 17	12.0			28.4	6.2			15.7
18 to 24	67.8	87.9	88.7	98.0	35.7		35.8	23.1
25 to 34	93.5	99.2	97.8	98.2	30.9	39.6	25.9	36.5
35 to 44	92.3	98.9	95.4	98.6	28.3	50.5	35.8	34.5
45 to 64	73.6	97.6	90.5	96.5	14.9			41.8
65 and over	27.3				3.2			

2. FUTURE OUTLOOK

Population projections, even hypothetical, are basic to the very concept of the present study. Owing to the peculiar social and economic characteristics of Guam's population(s), however, together with an extreme scarcity of systematic and reliable data, such projections as can be made must be handled with even more than the usual degree of caution.

One might suppose that a small, isolated island community would be in a better position than most to obtain sufficient quantitative and qualitative details on arrivals, departures, births, and deaths to allow precise intercensal population estimates. Even in the absence of such information, it might be expected that the annual census of the civilian areas conducted by the village commissioners, supplemented by the presumably precise information available to local military and immigration officers, would provide satisfactory estimates of detailed population changes.

Neither, unfortunately, is the case. Within 4 years of the 1960 U.S. census, there was confusion about the size and composition of the island's population. The Census Bureau's estimate for 1964, for example, was 68,400—compared with a figure of 73,800 tentatively adopted by the Guam Department of Land Management. The Census Bureau has access to (presumably reliable) annual data from Federal sources on military and Federal civil service personnel and dependents and on temporary and permanent resident aliens, but they are apparently not broken down by on- and off-base residence. To these it adds the annual village commissioners' count of the population in civil areas and applies a substantial adjustment equal to the discrepancy between the figure obtained for 1960 by this method and the 1960 U.S. Census count. However, the department of land management indicates that it does not have access to the annual data from the Federal agencies on a systematic basis. It is clear from the 1960 commissioners' and census results, together with certain internal implausibilities in the commissioners' figures, that there is considerable underenumeration in the latter, particularly in the non-Guamanian components.

Expansion and systematization of the data collected by Federal agencies and a pooling of this information between the Census Bureau and the department of land management are obviously appropriate. Badly needed also are the collection of arrival-departure information;[2] greater detail in the classifications of births and deaths by the government of Guam and the U.S. naval hospital; and/or a large improvement in the census procedures of the village commissioners. It would be better to have a reasonably reliable local census every 2 or 3 years than a useless one annually. Possibly the funds allocable to the annual census could be diverted to the department of land management or to the U.S. Census Bureau for a less frequent and more professional island census.

For the purposes of this study, the main concern is with the more or less permanent local population—those persons associated on a more than casual or transient basis with the civilian community. Military personnel and their dependents are, of course, a matter of interest in connection with tourism, retail trade, school enrollment, and labor supply; but there is very little basis for projecting the size of this category.

(a) Guamanian (Chamorro) population

Results of the commissioners' censuses for 1960–65 are compared below with the U.S. census returns for 1960:

	1960	1961	1962	1963	1964	1965
Commissioners	34,787	36,262	37,680	37,975	38,360	39,802
U.S. census	34,702					

Despite close agreement of the totals, the two sources showed large discrepancies for individual election districts in 1960; the commissioners' census for 1964, moreover, showed only 878 Guamanian children under 1 year of age and 1,063 of age 1. Inspection of table 5 indicates, however, that these figures are most unlikely—even after account is taken of Guamanian mothers with Caucasian and Filipino husbands. Nevertheless, in view of the close agreement of the totals in 1960 and the absence of other direct evidence, the commissioners' count for 1965 provides at least a benchmark. The indicated increase of 5,000 (14 percent) in 5 years compares with increases of about 7,000 (35 percent) in 1940–50 and 7,600 (28 percent) in 1950–60 and suggests that the recent rate of growth has been at least as high as in 1950–60, whether due to similar rates of natural increase and outmigration or to a new combination of both.

[2] This would be useful also in gaging the size and turnover of the transient population, its trip purposes, and its travel patterns—all valuable for several purposes, including the estimation of tourist potential.

TABLE 5.—*Live births by place of birth and mother's birthplace*

Mother's birthplace	Place of birth			Total births
	GMH [1]	USNH [2]	Home and other	
1964				
Guam	1,424	147	28	1,599
Continental United States	70	462		532
Philippines	126	53		179
Trust territory	153	10	3	166
Other	49	33		49
Total	1,789	705	31	2,525
1963				
Guam	1,447	163	61	1,671
Continental United States	71	419		490
Philippines	103	54		157
Trust territory	127	8	3	138
Other	18	30	2	50
Total	1,766	674	66	2,506
1962				
Total	[3] 1,591	[3] 925	76	2,592
1959 [4]				
Total	1,093	895	344	2,332
1957 [4]				
Total	1,052	[3] 905	370	2,327
1954				
Total	731	610	598	1,931

[1] Guam Memorial Hospital.
[2] U.S. naval hospital.
[3] High proportion of USNH births may be attributable to Typhoon Karen damage to GMH.
[4] Fiscal year.
[5] Includes 38 Guamanian births referred from GMH; referrals for other years unknown.

Arbitrarily, in the absolute absence of statistical records to establish trends in the amount of net outmigration, the 1950–60 rates of attrition by age group in the Chamorro population shown in table 6 may be applied to the 1960 population to obtain projections of the 10-and-over population in 1970 and the 20-and-over population in 1980. Table 6 is of considerable interest in itself. Note that the 20–24 male age group was actually smaller in 1960 than in 1950 as a result of outmigration. Only 54–55 percent of the 10–14 and 15–19 male cohorts of 1950 remained to populate the 20–24 and 25–29 groups of 1960. In the corresponding female groups, about 77 percent remained in 1960. The age 30–34 cohorts of both sexes in 1960 also exhibited a rather high rate of attrition at 83–84 percent. But even in the younger and older age groups, the rate of attrition was much in excess of what could be expected from mortality alone.

TABLE 6.—*Attrition rates by age group, 1950–60, Chamorro population*

Age group	1950		Age group	1960			
	Male	Female		Male	Percent remaining	Female	Percent remaining
Under 5	2,852	2,744	10 to 14	2,710	95.2	2,627	95.7
5 to 9	1,751	1,668	15 to 19	1,509	89.6	1,534	92.2
10 to 14	1,887	1,730	20 to 24	1,020	54.1	1,334	77.1
15 to 19	1,577	1,407	25 to 29	867	55.0	1,084	77.0
20 to 24	1,122	1,306	30 to 34	930	83.4	1,008	83.5
25 to 29	795	979	35 to 39	703	89.4	849	85.8
30 to 34	671	857	40 to 44	591	88.1	757	88.3
35 to 39	663	892	45 to 49	543	81.9	647	93.5
40 to 44	561	807	50 to 54	467	83.2	543	68.4
45 to 49	454	680	55 to 59	377	81.9	444	90.8
50 to 54	359	472	60 to 64	245	76.8	296	79.9
55 to 59	267	304	65 to 69	189	65.8	240	78.9
60 to 64	180	225	70 to 74	103	57.2	146	64.9
65 and over	293	449	75 and over	114	38.9	184	41.2

The 15–19 male group also showed a slight decrease from 1950 to 1960, but in this case the reason was the unusually small size of the 1960 cohort itself, which was born during the World War II years. The first 5-year cohort born after the war (under 5 in 1950) more than compensated for the preceding deficit, however, and substantial increases have occurred in the size of each subsequent cohort. Thus the age 10–14 cohort of both sexes in 1960 was 72 percent larger than the 15–19 group of the same year. This cohort constitutes the 15–19 group as of 1965 and, even allowing for attrition, the latter must be at least 60 percent larger than the 15–19 group of 1960. The present (1965) 20–24 group, on the other hand, is drawn from the abnormally small wartime cohort and, based on the 1950–60 rates of attrition, may actually be smaller than the 20–24 group of 1960. The year 1965, therefore, marks the start of a period when 15 years of successively larger postwar baby crops will be coming of college and working age.

Table 7 shows the 1970 and 1980 Chamorro populations remaining from the 1960 population using 1950–60 attrition rates unchanged. The population aged 20 and over increases from 13,673 in 1960 to 16,595 in 1970 and 21,044 in 1980. The 1960–70 percentage increase of 20–21 percent is little greater than that of 1950–60; 1980, however, shows a 27-percent increase over 1970. As a result of the differential male-female attrition rates, the female percentage of the 20-and-over population rises from 55 percent in 1960 to 56.7 percent in 1970 and 57.8 percent in 1980. Of particular interest are the implied increases in the 20–29 age group—from 4,305 (1,887 male and 2,418 female) in 1960 to 5,540 (2,330 male and 3,210 female) in 1970, and 7,740 (3,250 male and 4,490 female) in 1980. The plausibility of such a development may be left to the judgment of the reader. It could fail to materialize if Chamorro females showed a relatively greater propensity to outmigrate in the future than in 1950–60 or Chamorro males a relatively smaller propensity. Changes in educational achievement and social values might tend to make both males and females more outward-mobile.

TABLE 7.—*Chamorro population by age group, based on 1950–60 attrition rates*

Age group	1960		1970		1980	
	Male	Female	Male	Female	Male	Female
0 to 4	3,422	3,158				
5 to 9	3,024	3,039				
10 to 14	2,716	2,627	3,260	3,020		
15 to 19	1,869	1,534	2,715	2,800		
20 to 24	1,020	1,334	1,470	2,030	1,760	2,330
25 to 29	867	1,084	860	1,180	1,490	2,160
30 to 34	936	1,008	850	1,115	1,290	1,700
35 to 39	705	840	775	930	770	1,012
40 to 44	591	757	825	887	750	982
45 to 49	543	647	576	785	635	870
50 to 54	467	543	492	677	687	793
55 to 59	372	444	445	568	472	712
60 to 64	245	296	359	432	378	540
65 to 69	189	240	245	350	292	464
70 to 74	103	146	140	192	205	280
75 and over	114	186	158	234	211	339
Total, 20 and over	6,150	7,523	7,195	9,400	8,880	11,099

The Chamorro population under 20 years of age is even more problematical. For 1970, we have from table 7 a total of 11,795 in the 10–19 age group; for 1980, no figures at all. Fertility rates together with female population of childbearing age are the determinants and here too we are on highly uncertain ground. There is some evidence of a declining birthrate: the ratio of Chamorro children under 1 year of age was 48 per thousand in 1950 and 39 per thousand in 1960. If these figures are regarded as approximations of the crude birthrate, the decline was substantial (although the rate was still very high by U.S. standards in 1960). Replacing total population with the number of females of childbearing age (15–44), which is a more meaningful measure, results in ratios of 226 per thousand in 1950 and 207 in 1960 (as compared with about 118 in the continental United States). This is a relative decline only half as large as that of the crude birthrate. If we assume that the decline continues at about 2 per thousand per year, the rate would be 197 in 1965; 187 in 1970; and 167 in 1980.

The number of women of childbearing age will, however, grow more rapidly than it did in 1950–60 when the increase was less than 14 percent. The figures in table 7 imply a 36-percent increase in this age group during 1960–70, to 8,942. For 1980, the table gives 8,184 females aged 20–44; even if we assume that the 15–19 group is no larger in 1980 than the 20–24 group, the total is 10,514 for 1980—or 18 percent greater than in 1970.

The 2 sets of figures jointly yield births numbering about 1,670 in 1970 and 1,760 in 1980. Table 5 shows 1,671 births to Guamanian mothers in 1963 and 1,599 in 1964. Comparable statistics for 1960 are not available to us, but the census figure of 1,356 Chamorro children under 1 year of age in 1960 is indicative. This figure should be adjusted upward to place it on a calendar year basis and to take account of children born to Guamanian wives of Filipino or other fathers—say, to 1,500. The 1963 and 1964 births, however, should be adjusted downward to take account of infant mortality—perhaps to an average of 1,600 for both years. Further refinement or even speculation is hardly warranted. For simplicity, we assume an average of 1,525 Chamorro births per year in 1960–65, 1,600 in 1965–70, and 1,700 in 1970–80. Allowing liberally for attrition and for the fact that some of the children would be classified as Filipino while others would be outmigrants with their Guamanian mothers and stateside fathers, we assume the following Chamorro child populations in 1965–80:

Age group	1960	1965	1970	1975	1980
Under 5	6,580	7,300	7,600	8,050	8,100
5 to 9	6,063	6,430	7,040	7,430	7,875
10 to 14	5,343	5,790	6,280	6,880	7,260
15 to 19	3,103	5,000	5,520	5,850	6,400

Adding the above figures to the adult populations previously calculated for 1970 and 1980 (with interpolated values for 1965 and 1975), the following Chamorro populations are obtained:

Age group	1960	1965	1970	1975	1980
Under 20	21,089	24,510	26,440	28,210	29,635
20 and over	13,673	15,200	16,595	18,800	21,045
Total	34,762	39,710	43,035	47,010	50,680

Inasmuch as the projected rate of increase drops to 24 percent in 1960–70 and 18 percent in 1970–80, the above figures are conservative.

(*b*) *Filipino population*

From 1960 census data, it is estimated that, in addition to 6,000 or so contract workers, about 2,600 permanent resident and citizen Filipinos were present, distributed as follows:

Age group	Male	Female	Total
Under 20	802	772	1,574
20 and over	700	334	1,038
Total	1,502	1,110	2,612

Nearly 1,500 of this total were native born, but we do not know how many of the remainder were naturalized citizens.

By July 1964 the number of alien contract employees declined to about 4,300; at the end of 1964, it was no more than 4,200; and, by mid-1965, about 3,700. The permanent Filipino population, however, increased as a result of births and new admissions to permanent resident status (including entry of dependents). Figures obtained by the Guam Department of Land Management [3] indicate that 1,560 Filipino permanent resident visas were processed during the fiscal years 1961–64, and that 1,315 Filipinos were naturalized between April 1, 1960, and

[3] Memorandum dated May 6, 1965, to director of land management from chief of planning, planning division.

January 1, 1965. (The latter group, according to the information obtained by land management, had 3,545 non-U.S.-citizen family members residing elsewhere, which suggests that the potential influx of dependents is by no means exhausted.) It is also reported that 1,960 Filipino permanent residents were in Guam at the end of 1964. Finally, it is estimated from table 5 and 1960 census data that possibly 600 Filipino births occurred during 1960–65. No information is available, however, on Filipino deaths and outmigrations.

Based on this sketchy and partly ambiguous evidence, we estimate the mid-1965 "permanent" Filipino population to have been in the neighborhood of 5,000, but we cannot even guess at the sex-age distribution. The uncertainties are compounded in making projections of the future population by the possible effects of the new immigration law. Again arbitrarily, therefore, we assume that the Filipino component will increase by 2,000 in 1965–70 and by 1,500 both in 1970–75 and 1975–80. It is also assumed that the age distribution is similar to that of the Chamorro population but that adult males will somewhat outnumber adult females. This results in the distributions shown in table 8.

TABLE 8.—*Hypothetical population distributions, 1965–80*

	Chamorro			Filipino			Other			All statesiders		
	Under 20	20 and over	Total	Under 20	20 and over	Total	Under 20	20 and over	Total	Under 20	20 and over	Total
1965:												
Male	12,500	6,750	19,250	1,525	1,200	2,725	770	580	1,350	.....	.....	.....
Female	12,000	8,450	20,450	1,475	800	2,275	730	520	1,250	.....	.....	.....
Total	24,500	15,200	39,700	3,000	2,000	5,000	1,500	1,100	2,600	9,000	13,000	22,000
1970:												
Male	13,500	7,200	20,700	2,150	1,600	3,750	900	675	1,575	.....	.....	.....
Female	12,950	9,400	22,350	2,050	1,200	3,250	850	675	1,525	.....	.....	.....
Total	26,450	16,600	43,050	4,200	2,800	7,000	1,750	1,350	3,100	9,000	13,000	22,000
1975:												
Male	14,400	8,100	22,500	2,450	2,000	4,450	1,020	780	1,800	.....	.....	.....
Female	13,800	10,700	24,500	2,350	1,700	4,050	980	820	1,800	.....	.....	.....
Total	28,200	18,800	47,000	4,800	3,700	8,500	2,000	1,600	3,600	9,000	13,000	22,000
1980:												
Male	15,100	8,900	24,000	2,800	2,400	5,200	1,180	920	2,100	.....	.....	.....
Female	14,550	12,150	26,700	2,700	2,100	4,800	1,120	980	2,100	.....	.....	.....
Total	29,650	21,050	50,700	5,500	4,500	10,000	2,300	1,900	4,200	9,000	13,000	22,000

(c) White population

Since the white population is tightly linked with employment and highly mobile, its size at any given time does not have any particular connection with the future potential size of the labor force. Most of the stateside children present in Guam today will not be there a few years hence due to the turnover of military and civil service families and to the probability that they will (or can) return to the United States for higher education and employment. Any downturn in the employment of statesiders should be quickly reflected in corresponding reductions in the white labor force and its dependents.

The 1960 census listed 20,724 of white race, of whom 7,700 were in the Armed Forces and 2,900 were in the civilian labor force. Of the latter, 1,673 were male and 1,229 female; many of the females presumably were military dependents. Nearly 1,800 (64 percent) of the white civilian workers were in Government employment. By early 1965, the total number of white (stateside-hire) Government employees had declined slightly to about 1,700. No information is available on white persons in private employment in 1964 or 1965, but it is possible that such employment at present is as high or perhaps higher than it was in 1960 because of the activities of private firms under contract to the military, NASA, etc.

The number of military personnel, according to U.S. census publications, was 8,400 in mid-1964 (as compared with either 9,944 or 8,705 in 1960). But figures supplied by military authorities in Guam are as follows:

	Navy (fiscal 1964)	Air Force (fiscal 1965)	Total
Military residents	2,617	2,984	5,601
Military and dependents	8,717	7,549	13,266
Families	1,725	1,318	3,043
Civil service employees (stateside hire)	857	161	1,018
Civil service and dependents	2,861	468	3,299
Families	630	71	701

Despite the confusion about the size of the military population, it is clear that some decline occurred from 1960 to 1964. Now, however, there are signs of an increase—but it is impossible to foresee its magnitude, duration, or effects on civil service employment and the Federal-dependent population. For purposes of the present study, we project government employment of statesiders and the population dependent on them at the 1965 level; we assume a resident military population of 6,000 in 1970 and thereafter, with the same ratio of dependents as in 1964–65; and we assume that the white population associated with the private sector will consist of 750 head-of-household workers with a dependent population ratio equal to that of Federal civil service employees. These assumptions result in a "stateside" population (including a small proportion of nonwhites) of about 22,000 during 1970–80.

(d) "Other" population

This category, which totaled about 2,200 in 1950 and nearly 3,000 in 1960, is a highly heterogeneous one. The 1960 population was 59 percent male, 25 percent foreign born, and included 687 members of the Armed Forces. Removing the latter from the male population reduces it to 1,071, as against 1,220 females. On the assumption that some of the nonwhite military personnel had dependents present in Guam, we take the civilian-connected "other" population to be 2,000, more or less equally divided between males and females, and with a minority of adults. Nearly 57 percent of "other" employed in 1960 were government workers. Of the latter, those who were "stateside hires" of the Federal Government are, like the nonwhite military population, covered by the assumptions already made regarding the future employment and population of statesiders. The relatively large size of "other" households (table 2) and the relatively large number of young children (table 3) suggest, however, that a high rate of natural increase may be expected. Census data for 1950 and 1960 also indicate substantial net inmigration. From a base of 2,000 in 1960, therefore, "other" population is projected as increasing at roughly twice the percentage rate of the Chamorro population in each 5-year period through 1980.

3. HYPOTHETICAL FUTURE POPULATION AND LABOR FORCE

Table 8 summarizes the results of the assumptions made about the future population. We emphasize that the figures given are not forecasts or even "projections," for in several of the components there was no relevant base from which to project. Table 8 should instead be regarded as a purely hypothetical model reflecting fairly conservative growth expectations.

The main point of interest lies in the implications for the size of the future labor force and, within the latter area, for the "nonstateside" component. For this purpose, the participation rates given in table 4 are not particularly helpful: the Filipino rates include the effects of alien contract labor, which is excluded from the analysis at this point; and the Chamorro rates can hardly be expected to continue so low. We assume, therefore, that average U.S. participation rates are applicable to the Filipino and "other" male populations, and that the Chamorro male rates will rise to approximate the U.S. level by 1975. Filipino and "other" female participation rates are assumed to be slightly lower than U.S. rates throughout 1965–80; Chamorro female rates are projected as approaching U.S. rates by 1975 for the 15–34 age groups but not in the older groups. The white and contract Filipino labor forces are excluded because they are regarded as "swing" items—present only to the extent that employment for them exists.

Table 9 summarizes the participation rates used for the various groups, and table 10 indicates the resulting hypothetical male and female civilian labor forces obtained for 1965–80 (Chamorro, Filipino, and "other" only). None of the hypothetical 5-year increases of the total "local" labor force are as large as the apparent increment of 2,800 or so during 1960–65, reflecting the conservative

character of the population growth assumptions. The growth is substantial, nevertheless, averaging about 430 per year in 1965–70, 520 per year in 1970–75, and 480 per year in 1975–80. Much of the current increase represents new additions to the labor force; the total Chamorro labor force, for example, is indicated as increasing by about 3,200 in 1960–70, of which about 1,800 are in the 15–24 age brackets.

TABLE 9.—*Hypothetical labor force participation of the Chamorro population, 1965–80*

Age group	Percent females participating					Percent males participating				
	1960	1965	1970	1975	1980	1960	1965	1970	1975	1980
15 to 19	[1] 16.0	20	24	28	28	28.0	33	38	44	44
20 to 24	[1] 40.0	43	46	49	49	[1] 84.0	85	86	87	87
25 to 34	30.9	33	35	37	37	93.5	94	95	96	96
35 to 44	23.3	25	28	3.1	32	92.3	94	95	96	96
45 to 64	14.9	18	22	28	28	73.6	79	84	90	90
65 and over	3.2	4	5	6	6	27.3	27	27	27	27
	Number females participating					Number males participating				
15 to 19	253	500	673	810	980	442	940	1,030	1,275	1,400
20 to 24	534	.....	933	.....	1,140	880	.....	1,260	.....	1,530
25 to 34	646	.....	804	.....	1,430	1,685	.....	1,620	.....	2,610
35 to 44	372	.....	510	.....	635	1,194	.....	1,520	.....	1,450
45 to 64	287	.....	605	.....	945	1,198	.....	1,570	.....	1,950
65 and over	18	.....	40	.....	64	111	.....	150	.....	290
Total	2,110	2,900	3,655	4,370	5,094	5,490	6,800	7,150	8,275	9,230

[1] Estimated.

TABLE 9.—*Hypothetical labor force participation of the Filipino and "other" populations, 1965–80*

	Percent participation	Number			
		1965	1970	1975	1980
Filipino male:					
15–19	45	140	200	225	255
20 and over	90	1,075	1,430	1,790	2,150
Total	.....	1,215	1,630	2,015	2,405
Filipino female:					
15–19	28	85	115	135	155
20 and over	37	295	440	630	775
Total	.....	380	555	765	930
Other male:					
15–19	45	75	85	95	110
20 and over	90	525	615	715	830
Total	.....	600	700	810	940
Other female:					
15–19	28	40	50	55	65
20 and over	35	180	215	285	340
Total	.....	220	265	340	405

Total civilian employment has not been growing so fast as the local labor force; during 1960–65, it may have risen by less than 1,000. There were, however, compensating changes in the alien contract worker force and in "statesider" employment, the former decreasing by about 2,300 and the latter probably increasing somewhat. As a result, the labor market was still quite firm in 1965.

Fewer than 3,500 alien contract workers remained in Guam at the end of September 1965, however, and some of them were engaged in remaining typhoon reconstruction and other projects of a nonrecurring nature. If we suppose that as many as 2,500 of the contract workers are filling "permanent" jobs, these represent an employment cushion or reservoir to whatever extent aliens can be replaced by local workers. Such replacement is not automatic because many of the contract workers have skills or specializations that are not now available from the local labor force. (The same consideration applies, of course, to replacement of stateside personnel by local workers.) It is evident from table 10, moreover, that local labor force increments of nearly 5,000 by 1975 and 7,200 by 1980 would demand 2,500 additional jobs by 1975 and 4,700 by 1980 even if the alien "cushion" were fully utilized by those dates.

TABLE 10.—*Hypothetical local labor force composition (excluding statesiders), 1960–80*

	Male				Female				All			
	Chamorro	Filipino	Other	Total	Chamorro	Filipino	Other	Total	Chamorro	Filipino	Other	Total
1960:												
Under 20	442	------	------	------	253	------	------	------	695	------	------	------
20 and over	5,050	------	------	------	1,857	------	------	------	6,907	------	------	------
Total	5,492	600	430	6,520	2,110	160	210	2,480	7,602	760	640	9,000
1965:												
Under 20	840	140	75	1,055	500	85	40	625	1,340	225	115	1,680
20 and over	5,660	1,075	525	7,260	2,400	295	180	2,875	8,060	1,370	705	10,135
Total	6,500	1,215	600	8,315	2,900	380	220	3,500	9,400	1,595	820	11,815
1970:												
Under 20	1,030	200	85	1,315	675	115	50	840	1,705	315	135	2,155
20 and over	6,120	1,430	615	8,165	2,980	440	215	3,635	9,100	1,870	830	11,800
Total	7,150	1,630	700	9,480	3,655	555	265	4,475	10,805	2,185	965	13,955
1975:												
Under 20	1,275	225	95	1,595	810	135	55	1,000	2,085	360	150	2,595
20 and over	7,000	1,790	715	9,505	3,560	630	285	4,475	10,560	2,420	1,000	13,980
Total	8,275	2,015	810	11,100	4,370	765	340	5,475	12,645	2,780	1,150	16,575
1980:												
Under 20	1,400	255	110	1,765	880	155	65	1,100	2,280	410	175	2,865
20 and over	7,830	2,150	830	10,810	4,215	775	340	5,330	12,045	2,925	1,170	16,140
Total	9,230	2,405	940	12,575	5,095	930	405	6,430	14,325	3,335	1,345	19,005

B. EMPLOYMENT

The relative distributions of total civilian employment in 1960 by industry and occupation are shown in tables 11 and 12, respectively. Construction alone accounted for 38 percent of all employment, followed by public administration with 28 percent; employment in transportation was also unusually high at 8 percent. Most other categories accounted for unusually small proportions of employment. Given the overall distribution, disproportionately small proportions of Chamorros, whites, and others were employed in construction, a field which was dominated by Filipino workers and accounted for 69 percent of Filipino male employment. Disproportionately high proportions of Chamorros, whites, and others were employed in public administration; and Chamorros were also "overrepresented" in the field of water transportation as a result of the commercial port operations.

TABLE 11.—*Industrial group of employed persons, by race and sex, for Guam, 1960*

Industrial group	All races		White		Chamorro		Filipino		Other	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Agriculture, forestry, and fishing	2.6	1.8	1.2	0.4	6.4	2.9	0.2	.....	0.9	.....
Mining	.3	.....	.7	.....	.2	.....	.1	.....	.7	.....
Construction	38.2	.8	6.2	1.0	10.8	.6	69.4	2.6	14.8	.....
Manufacturing	3.1	2.1	6.4	1.2	3.3	2.2	2.0	2.0	5.9	5.6
Durable goods	1.4	.4	5.0	.5	1.1	.2	.7	.....	3.6	2.0
Ship and boatbuilding and repairing	1.1	.4	4.0	.4	.9	.2	.4	.....	3.4	2.0
Other	.3	.....	1.0	.1	.2	.....	.2	.....	.2	.....
Nondurable goods	1.7	1.7	1.4	.7	2.2	2.0	1.3	2.0	2.3	3.6
Bakery products	.6	.9	.1	.....	.3	1.1	.9	1.3	1.2	3.1
Beverage industries	.4	.1	.1	.....	.8	.1	.1	.7	.2	.....
Printing, publishing, and allied industries	.4	.5	1.0	.5	.6	.6	.1	.....	.7	.5
Other	.3	.2	.2	.2	.5	.2	.2	.....	.2	.....
Transportation, communication, and other public utilities	8.2	2.2	6.6	3.7	15.9	1.4	2.7	2.0	5.2	2.0
Transportation	7.3	1.3	4.9	2.3	14.2	.6	2.7	1.3	4.3	2.0
Water	4.3	.4	1.5	.4	10.2	.3	.5	.7	2.3	.....
Air	1.5	.4	2.6	1.0	1.0	.....	1.6	.6	.7	.5
Other	1.5	.5	.8	.9	3.0	.3	.6	.....	1.3	1.5
Communication	.3	.9	1.0	1.4	.5	.8	.....	.7	.2	.....
Utilities and sanitary services	.6	.....	.7	.....	1.2	.....	.....	.....	.7	.....
Wholesale and retail trade	9.6	28.6	9.2	20.3	10.1	32.3	8.7	37.9	17.8	33.0
Wholesale trade	1.8	1.2	1.9	1.3	2.3	1.1	1.1	2.6	4.3	1.0
Retail trade	7.8	27.4	7.3	19.0	7.8	31.2	7.6	35.3	13.5	32.0
Food stores (except dairy products)	.9	4.8	.6	.7	1.4	7.7	.6	1.3	1.1	1.5
General merchandise	2.4	6.6	2.0	7.5	1.5	5.8	3.4	9.1	2.5	7.1
Eating and drinking places	1.1	9.6	.7	6.4	.5	10.5	1.5	13.1	3.4	17.8
Other	3.4	6.4	4.0	4.4	4.4	7.2	2.1	11.8	6.5	5.6
Finance, insurance, and real estate	.5	2.4	1.0	2.4	.8	2.7	.1	.6	.5	.5
Business and repair services	1.4	.4	2.2	.3	1.6	.4	.9	.....	3.2	.5
Personal services	1.4	12.6	1.0	7.3	1.1	14.7	1.6	19.9	4.8	16.8
Private household	.4	6.3	.4	5.2	.5	6.2	.....	7.8	4.8	13.7
Laundry, cleaning, and dyeing	.4	4.5	.4	.3	.3	7.2	.5	3.3	.....	2.1
Barber and beauty shop	.5	1.0	.....	.9	.1	.8	1.0	5.2	.....	.5
Other	.1	.8	.2	.9	.2	.5	.1	3.3	.....	.2
Entertainment and recreation	1.5	1.1	1.2	1.0	1.0	1.2	2.1	1.3	.9	.5
Professional and related	4.9	28.4	13.6	34.3	7.5	25.5	.7	25.5	2.7	26.9
Medical and other health	1.8	6.8	2.1	5.5	3.6	7.4	.4	12.4	1.8	5.1
Educational	2.3	18.9	8.9	26.0	3.1	15.1	.2	13.1	.5	20.8
Welfare and religious	.4	2.1	1.6	1.6	.4	2.7	.1	.....	.....	.5
Other	.4	.6	1.0	1.2	.4	.3	.1	.....	.4	.5
Public administration	27.7	18.8	49.1	27.8	40.5	14.9	11.4	8.5	41.5	13.7
Not reported	.6	.8	1.6	.3	.8	1.2	1	.....	1.1	.5
Total	13,680	3,528	1,639	1,150	5,099	2,028	6,503	153	439	197

Table 12 indicates that the proportion of Filipinos in skilled manual occupations was comparatively high and that of Chamorros comparatively low. Fully one-third of the Chamorro males, on the other hand, were classified as semiskilled workers and laborers. Professional and managerial occupations accounted for nearly half of the white male employment—far higher than in the other groups. More or less the same general patterns remain typical of the Guam economy today—the dominance of government activities and construction, a relatively highly skilled and highly paid white labor force, a relatively low but rising average level of occupational achievement by Chamorros, and the use of Filipino contract workers to fill quantitative and qualitative deficits in the supply of labor at all skill levels at "bargain" prices.

TABLE 12.—*Occupational group of employed persons, by race and sex, for Guam, 1960*

Occupational group	All races		White		Chamorro		Filipino		Other	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Professional, technical, and kindred workers	6.4	22.2	23.0	28.4	4.8	18.1	3.4	28.8	8.0	23.9
Farmers and farm managers	2.0	1.2	.4	.1	5.2	2.1	.1	.....	.4	.....
Managers, officials, and proprietors (except farm)	6.2	6.7	23.6	7.8	5.2	6.0	2.2	5.9	12.8	9.6
Clerical and kindred workers	11.0	31.0	10.7	39.8	11.5	27.5	10.7	19.6	9.1	23.8
Sales workers	1.9	10.6	1.8	6.4	2.3	13.4	1.6	7.8	3.0	8.1
Craftsmen, foremen, and kindred workers	34.7	.6	28.0	.4	25.1	.8	43.1	.....	45.6	.....
Operatives and kindred workers	13.9	5.8	5.2	.6	16.5	8.5	14.2	12.4	9.8	3.6
Private household workers	.2	6.2	.2	5.1	.1	5.9	.....	7.8	4.5	13.7
Service workers (except private household)	10.7	13.9	2.9	10.8	10.8	15.0	13.2	17.7	2.0	16.8
Farm laborers and farm foremen	.3	.4	.1	.....	.8	.7	.1	.....	.....	.....
Laborers (except farm and mine)	11.9	.4	2.1	.....	16.8	.7	11.1	.....	3.9	.....
Occupation not reported	.8	11.0	2.0	.6	1.0	1.3	.3	.....	.9	.5
Total	13,680	3,528	1,639	1,150	5,099	2,028	6,503	153	439	197

The practical importance of government employment is considerably understated by table 11, which classifies workers by functional categories rater than type of employer and reflects a count of 4,455 workers in public administration. Other census data (table 13) indicate total government payrolls of 7,300 or over 42 percent of civilian employment, reflecting the extent to which government performs functions in Guam that elsewhere would be partially—perhaps largely—

TABLE 13.—*Employment, 1960*

	Private wage and salary workers	Government workers	Self-employed	Unpaid family workers	Total
Agriculture:					
Chamorro:					
Male	18	6	293	30	317
Female	4	.....	43	12	59
Filipino:					
Male	6	.....	3	.....	9
Female	.....	.....	.....	.....	.....
Other:					
Male	2	.....	2	.....	4
Female	.....	.....	.....	.....	.....
White:					
Male	3	1	15	.....	19
Female	2	.....	1	.....	3
Total:					
Male	29	7	283	30	349
Female	6	.....	44	12	62
Nonagricultural industries:					
Chamorro:					
Male	1,404	3,196	171	11	4,782
Female	959	885	96	29	1,969
Filipino:					
Male	5,381	1,081	31	1	6,494
Female	82	56	13	2	153
Other:					
Male	204	216	15	.....	435
Female	101	85	7	4	197
White:					
Male	431	1,099	89	1	1,620
Female	419	679	45	4	1,147
Total:					
Male	7,420	5,592	308	13	13,331
Female	1,561	1,705	161	39	3,466
Grand total:					
Male	7,449	5,599	679	43	13,680
Female	1,567	1,705	205	51	3,528

performed by the private sector. Statistics on Government of Guam and Federal employment from other official sources (table 14) show a combined employment of at least 7,700 for 1960 and 10,600 for 1965. The latter figure is inflated by an unusually high number of government of Guam temporary employees and should perhaps be discounted somewhat. Even so, the proportion of total employment represented by government payrolls in 1965 probably approaches 55 percent, and for the Chamorro labor force it may be as high as two-thirds.

TABLE 14.—*Government employment*

	1960	1961	1962	1963	1964	1965 [1]	1965 [2]
Federal Government:							
Local	1,876	2,047	2,263	3,335	3,332	3,229	(3)
Stateside	1,819	1,821	1,755	1,498	1,473	1,455	(3)
Noncitizen	551	460	197	1,526	1,537	1,207	(3)
Total	4,246	4,328	4,215	6,359	6,342	5,891	(3)
Government of Guam (executive only):							
Regular	2,008	2,059	2,148	2,203	2,443	2,990	2,669
Other	1,451	1,061	1,097	1,312	1,445	1,789	1,913
Total	3,459	3,120	3,245	3,515	3,888	4,779	4,582
Grand total	7,705	7,448	7,460	9,874	10,230	10,670	(3)

[1] February 28.
[2] July 1.
[3] Not available.

Sources: Federal employment from Statistical Abstracts of the United States and Government of Guam. Government of Guam employment from Annual Reports of the Governor for 1960-64 and Department of Commerce for 1963-65.

A study of employment in 1964 for the government of Guam [4] estimated total employment in that year at 18,750 and Government employment at 10,000. The percentage distribution by industry was estimated as follows:

Agriculture, forestry, and fishing	2.4
Mining	.3
Construction	16.0
Manufacturing	3.2
Transportation, communication, and utilities	3.2
Trade, wholesale and retail	12.8
Finance, insurance, and real estate	1.9
Services	6.4
Government	53.8
Total	100.0

Although these figures are classified differently than those in table 11 because of the different treatment of Government employment, some inferences can be drawn from the comparison. Construction has obviously diminished considerably in relative and absolute importance, and finance, insurance, real estate has increased its proportion somewhat. The decline of construction activity was offset by the increase of Government employment, and there is no evidence of significant shifts in the employment percentages of the other categories.

As to the total number presently employed, only the crudest kind of estimation is possible because very little information is available on employment in the private sector. We suspect, however, that the aforementioned estimate of 18,750 is somewhat high, even for 1965.

C. INCOME AND WAGE RATES

Census data on the median incomes of families and individuals in 1959 are shown in table 15. Also shown are estimates of per capita income based on the Census statistics of income distribution. No imputation has been made of the value of owner-occupied housing or of goods produced and consumed at home;

[4] Odessa Dubinsky, Survey of Manpower Resources, 1964-70, June 1964.

these and other sources of understatement prevent direct comparisons of the census income data with Department of Commerce statistics on personal income. From table 15, however, it is evident that incomes in Guam are substantially lower than those of the U.S. mainland. The white income levels, although highest, reflect the relatively low wages of the military population. Similarly, the median income of Filipino unrelated individuals represents the income status of the alien contract workers.

TABLE 15.—*Median and average income, Guam and United States, 1959*

[In dollars]

	Guam					United States (all races)
	All races	White	Chamorro	Filipino	Other	
Median income:						
Families	4,549	5,857	3,516	4,291	5,355	5,660
Unrelated individuals	1,731	1,759	1,171	1,720	1,948	1,506
Persons with income	2,169	2,848	2,357	1,774	2,483	1,823
Average income: [1]						
Persons with income	2,935	3,813	1,441	2,067	3,337	3,334
Per capita, total population [2]	1,185	1,962	595	1,585	1,498	1,682

[1] Estimated from census data on distribution of persons by reported income. For incomes between 0 and $10,000, midpoints of income ranges were multiplied by number of persons in each range. For incomes over $10,000, average income was arbitrarily assumed to be $12,500 and multiplied by number of persons in the group. Aggregate income estimates so obtained were divided by persons with income and total population, respectively.

[2] Note that the per capita income figures shown here are not comparable with the per capita personal income figures published by the U.S. Department of Commerce. The latter figure for the United States in 1960, for example, was $2,217, or considerably higher than estimates based on census data. U.S. estimates obtained in the same way as the Guam estimates are therefore included above for purposes of comparison.

Source: U.S. Census of Population, 1960, Final Reports PC(1)-1D and PC(1)-54B.

Median incomes of Federal employees excluding the military were as follows in 1960 and 1962:

	1960	1962
Local U.S. citizens	$3,162	$3,411
Other U.S. citizens	7,010	7,259
Noncitizens	1,794	2,621

The sharp contrast between the income of stateside and local employees comes about partly from the 25 percent pay premium received by statesiders and partly from their higher skill levels. Even among local citizens, however, the pay received from the Federal Government has been substantially higher than that received from the government of Guam for similar types of works, and the latter in turn has been higher than the private sector wage structure. Prior to 1964, the government of Guam's pay scale was closer to that of the private sector. Since its upward revision in that year, however, it has more nearly approached the Federal scale. Yet there remains a definite hierarchy, partly in terms of status and partly in terms of money: local workers tend to regard Federal civil service employment as the most desirable, government of Guam as next best, and private employment as least attractive.

Since Guam has been chronically short of labor, it is understandable that private firms (as residual employers) have experienced high rates of turnover, absenteeism, lack of needed skills and other labor problems. For this reason, together with the lower wages accepted by alien contract workers, private firms have made use of alien labor to the maximum extent allowed by the Guam Department of Labor and Personnel and the U.S. Immigration Service under the defense and disaster programs. This adds a fourth income category to those listed above. Finally, wage rates paid by the military to local workers employed in activities financed by nonappropriated funds represent still another category. Some idea of the complexity and artificiality of the resulting wage structure may be obtained from table 16, which gives a crude comparison of wage rates in the various employee classes for similar occupations as of August 1964.

TABLE 16.—*Hourly wage rates*

	Auto mechanic	Carpenter	Electrician	Plumber	Welder	Truck driver	Laborer	Cook
Stateside hire: Navy (appropriated)	$3.63	$3.63	$3.75	$3.75	$3.75	$1.91	$1.68	$2.08
Local hire:								
Navy (appropriated)	2.90	2.90	3.00	3.00	3.00	1.53	1.34	1.65
Navy (nonappropriated)	(1)	(1)	1.32	1.25	1.25	1.25	(1)	1.20
Government of Guam	2.25	2.25	2.25	2.25	2.25	2.05	1.40	2.25
Private contractors	1.40	1.40	1.40	1.50	1.40	1.40	1.25	1.35
Aliens:								
Navy (both funds)	1.02	1.02	1.03	1.03	1.03	.98	(1)	.97
Private contractors	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.15

[1] Not available.

Source: Government of Guam, Department of Commerce.

Many residents of Guam at present are receiving the $1.25 minimum wage or less; others, whether voluntarily or involuntarily, are only intermittently employed. Thus the equalization of Federal civil service salaries for local hire and stateside hire employees (excluding the statesider pay premium) and the increased rates of pay for government of Guam employees have probably served to increase income disparities in the local labor force. As the growth rate of government employment slows down, the growth of the labor force will result in a rising proportion of lower paid and/or unemployed workers side by side with a relatively affluent class of government employees—unless, of course, employment and labor productivity in the private sector can be made to increase rather rapidly. There is poverty in Guam: a survey made in 1965 turned up 322 families with incomes less than $2,000 and 845 families with incomes less than $3,000 out of a total of 2,627 families who disclosed their incomes. Regardless of the validity of the sampling procedures used, the absolute number of low-income families is significant even though Guamanian conditions and customs may render mainland ideas about poverty income levels irrelevant.

As to aggregate income, we have from the 1960 census an indication of $79 to $80 million for 1959 and from the Guam Department of Commerce estimates of $74 to $77 million for 1962 and $84 to $88 million for 1963.[3] Those income tax returns filed in Guam for 1963 yielded the following breakdown:[4]

Salaries and wages	$49,682,000
Business income (net)	2,464,000
Farm income (net)	25,000
Gross rents and royalties	800,000
Dividends and interest	195,000
Other income	173,000
Total	53,337,000

[3] Guam Department of Commerce, "Quarterly Review of Business Conditions in Guam," December 1964.
[4] Ibid.

For Federal agencies, the following income data are available from the Guam Department of Commerce:

	Civil service		
	Stateside	Local	Total
Navy (fiscal year 1964)	$11,215,246	$8,339,420	$19,554,666
Air Force (fiscal year 1965)	1,577,997	2,797,731	4,375,728
Other Federal[1]			1,603,165
Total			25,533,559

	Contract aliens	Military personnel
Navy (fiscal year 1964)	$2,427,762	$12,005,420
Air Force (fiscal year 1965)	852,352	8,546,555
Other Federal[1]		
Total	3,280,114	20,551,975

[1] Calendar 1964.
[2] Ibid.

Unfortunately, we do not know how much duplication there is between the department of finance figures and the Federal payrolls, nor do we know whether Federal nonappropriated fund employees (who are excluded from the Federal payrolls above) are included in the finance statities.

Systematic estimates of personal income and its distribution, like labor force and employment data and cost-of-living information, are needed in Guam. Cost-of-living weights could best be developed and occasionally updated by a qualified professional from the U.S. Bureau of Labor Statistics. But much could be done by the government of Guam to produce regular and detailed personal income estimates from tax rolls and from payroll information such as can be provided by the Federal agencies and from its own payroll records.

More complete and detailed demographic and economic statistics will be increasingly necessary unless a new military buildup absorbs the labor surplus that might otherwise develop over the next 5 to 10 years. Development of the private sector will be much more sensitive to labor productivity, wage rates, and types of skills available than the government sector has been. There is some basis also for expecting that the kinds of new private industry most likely to come to Guam would generally depend upon low-cost labor. This creates a dilemma for government policy. If efforts are made to reduce the duality of the local labor market and wage structure (e.g., by raising the wages of alien contract labor, as was attempted in 1964), the attractiveness of Guam to private investors will be diminished. If, on the other hand, the private sector develops on the basis of minimum-wage local labor, the dual income structure based on government versus private employment will continue. In practice, of course, the problem will not be so clear cut—but it will be present. And without an adequate system of social accounting, government policy concerning it will be formed in the dark.

D. Basic Employment Requirements

Both directly and indirectly (through federally financed construction projects), the Federal Government dominates the economy of Guam. It is virtually the only basic industry. There are few adults on the island who do not recognize that their present relative prosperity rests ultimately on military and other Federal operations, and that their economic futures are closely linked with future Federal activity and expenditures in Guam. Among those who recognize these facts, two points of view are possible (and extant): (1) That, as in the past, "something will turn up"—a new military buildup, a typhoon or whatever; or (2) that dependence upon the local exigencies of U.S. military strategies and policies creates an inherently uncertain and insecure economic prospect that could eventuate in boom, bust, both or neither.

To undertake an investigation such as the present one obviously implies the second point of view, even though it is a formal premise of the study that military activity will not be treated as a variable. Yet it should be clear that plans and

investments made on the assumption of an unchanged military impact and a growing local labor surplus would be voided almost overnight if shifting military requirements preempted much labor from the private sector. At the other extreme, it should be recognized that the social consequences of the economic advances so far achieved ("artificial" as the latter may be) are irreversible. There is not the slightest possibility that an adjustment could be made to a major downturn in Federal expenditures by a return to anything like the pre-World War II way of life. If it is granted that development of the private sector would be postponed (at the very least) in the first case, and would probably be incapable of bearing the employment burden of the second case, then it is clear that government policy planning cannot afford to ignore these readily conceivable extremes. The "middle ground" assumption, nevertheless, provides a convenient benchmark for appraising the potential role of the private sector.

The dimensions of the problem on the latter basis have already been suggested: the permanent local labor force at full employment can be conservatively expected to increase by more than 2,100 between 1965 and 1970 and by an additional 2,600 or more during 1970–75. Viewed against the presence in Guam in 1965 of 3,500 or so alien contract workers and perhaps 1,500 stateside employees of the Federal civil service, these labor force increments might suggest no reason for concern about a potential future unemployment problem. Replacement of only half of each group by local residents, for example, would represent 2,500 jobs and, assuming that the local workers would spend a higher proportion of their incomes in the local civilian economy than do alien contract workers or stateside Federal civil service employees, some additional nonbasic employment might be generated by the transfer.

Such expectations may not be realistic, however. The proportion of the current alien contract work force filling jobs that are in some sense "permanent" can hardly be established; but it may be quite low, taking into account the high proportion in construction work and the considerable further decline of construction employment that should be expected over the next 10 years in the absence of any major new government projects beyond those already scheduled. (The decline in construction employment will have unfavorable secondary effects on nonbasic employment, but these presumably will be small since the contract workers typically do not spend large proportions of their incomes locally.) Also, as previously noted, many of the Filipino workers are supplying skills not presently available from the local labor force at prices lower than local workers would expect. Both these factors, but especially the skill element, will tend to retard the replacement of Filipinos. Replacement of stateside civil service employees likewise will depend perhaps even more critically upon the speed with which the necessary training, skills and attitudes can be developed in the local labor force. Without attempting quantification, therefore, it is reasonable to assume that some increment of employment for the local labor force is available simply by means of transferring jobs from off-island to local workers, the size of which will depend, in large part, upon the educational and vocational preparation of Guamanians over the next 10 years.

This, however, would still leave a requirement of somewhere between, say, 2,500 and 4,000 additional jobs over the next decade. On the assumption that relatively few of these will be generated by the government of Guam, major new sources of employment will be needed in the private sector. For a community in Guam's size range, the ratio of basic to total employment may be taken to be in the neighborhood of 60 percent. Hence, the requirement would be met by the creation of new export-increasing and/or import-replacing employment of 1,500 to 2,400 workers in the private sector by 1975.

APPENDIX 2—NATURAL RESOURCES AND LAND USE

The special environmental characteristics of Guam will influence future economic development possibilities. This appendix considers those aspects of environment and land use which may constrain or encourage investment in the areas of economic development suggested in parts 1 and 2 of this study. A description of elements of the natural environment which have relevance to economic development is followed by a discussion of the implications of climate, terrain, and water supply in agricultural, commercial, industrial, and tourist developments. The second part of this appendix is devoted to a consideration of the present use of land on Guam, to the availability and capability of land for agricultural and other uses, and to land development possibilities.

A. Environmental Factors

1. Terrain and Soil Characteristics

Guam is a volcanic island, one of a series of arcuate submarine ridges paralleled by deep oceanic trenches extending from Japan to the Palau Islands. It is a part of the southern Marianas, including Farallon de Medinilla, Saipan, Tinian, Aguiguan, Rota, and Guam. The present physiography of Guam is generally divisible into three main land forms: the northern plateau, the central mountains and the southern mountains. Six distinct landform types comprise the 225 square miles of Guam. They include (1) mountainous land and rough summit land, (2) dissected sloping and rolling land, (3) hilly land, (4) plateau land, (5) interior basin and broken land, and (6) coastal lowland and valley floors.[1]

Mountainous land and rough summit areas form much of the western half of south Guam and all of the rugged southwest coast of the island, except where it is bordered by relatively small areas of coastal lowland and valley floor units. Mountainous land includes both sharp and relatively flat mountain summits bounded by long, irregular, steep-to-precipitous slopes. The mountainous land includes some comparatively large, V-shaped stream valleys, the most spectacular being the Geus River Valley, extending northeast from Meriz, and the Lonfit River Valley system in the northern part of the unit. Streams are deeply incised into the mountainous land and are generally choked with forest and tangled undergrowth.

Parallel to the mountainous land and occupying the eastern part of south Guam is dissected rolling land, separated into northern and southern sections by the NW-SE trending interior basin.

Hilly land in central and south Guam separates the dissected rolling land from plateau land that parallels the coast. It is characterized by rolling and undulating topography showing a fine dendritic pattern of dissection. Most of the small valleys contain no streams or bodies of standing water.

[1] The soils of Guam are separated into two major soil areas which correspond to the two major land form areas of the island. The undulating limestone plateau in the northern half of the island is comprised almost entirely of a slightly alkaline, red, soft, friable, porous soil that is rich in hydrated oxides of iron and aluminum. It is generally shallow, ranges in thickness from a few inches on ridgetops to a few feet in small depressions or solution cavities. Soils of the southern half of the island are acid, reddish, yellowish or brownish clays on deeply weathered volcanic rock material on hilly to mountainous upland. In central Guam, transitional between the two major soil areas, is a large, fan-shaped area of moderately deep, yellowish-brown and red clays developed on limestone. Other soils include beach terraces of limestone sand; alluvial soils in basins, valley flats, and alluvial fans; and made land of limestone rock and artificial fill.

Detailed information may be found in the "Military Geology of Guam, Mariana Islands," Intelligence Division, Office of the Engineer, Headquarters U.S. Army Pacific, 1959. This report describes and maps 14 soil units on Guam, including their color, texture, structure, consistence, pH reaction, and other apparent physical characteristics for each horizon of the soil profile. The topography, relief, and prevailing surface gradient are described for each soil unit, as is the vegetation observed on it, the internal and external drainage, the frequency and severity of flooding and erosion, and the kind of underlying bedrock. The location and distribution of each soil unit is shown in color on 11 sheets of a map series in a pocket of the report. The maps are at a scale of 1:25,000 and the locations of soil profiles and other soil investigation or sampling sites described in the text of the report are referred to by identifying site numbers and appropriate numbers or digits of the military grid, following the standard method for 1,000 meters and tenth decimals thereof. Soils are described in the report in the order of their genetic and geographic relationships since many of the units are interrelated associations of individual taxonomic units.

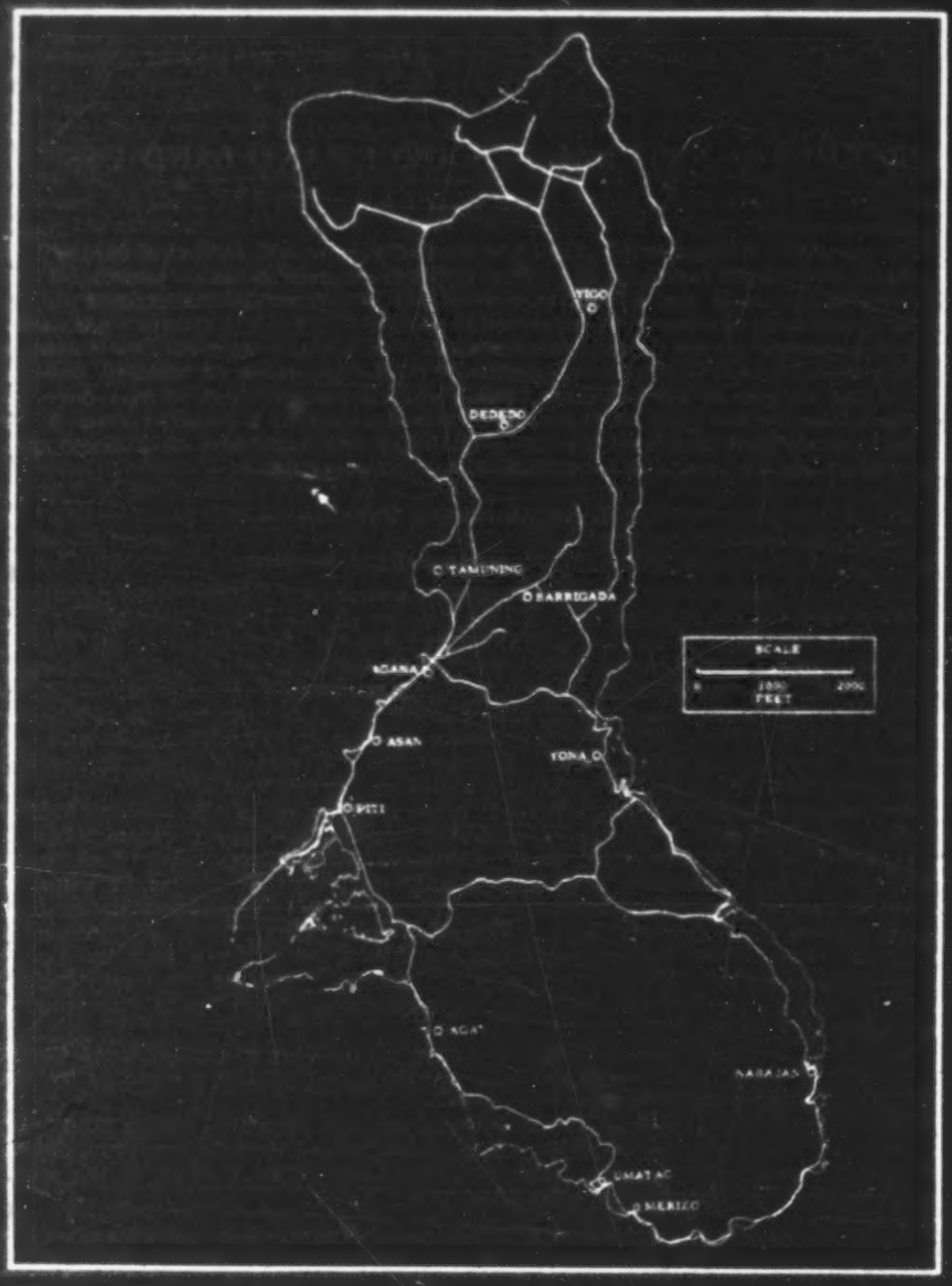


FIGURE 1.—Orientation map of Guam.

Plateau land includes all but a small part of north Guam, a belt along the southeast coast of the island, and much of Orote Peninsula. Plateau land in the north is bordered by discontinuous stretches of coastal lowland and valley floor land, and along the southeast coast discontinuous areas of coastal lowland and valley floor divide the plateau into separate areas. Basically, the unit is a single broad plateau surface bordered by steep coastal cliffs.

Interior basin and broken land characterizes an area occurring in south central Guam which has a heterogenous topographical expression. It includes limestone karst topography, many small conical hills, dissected sloping land, deeply eroded stream valleys, gently undulating land in the bottom of the basin, and many small valley floors.

Coastal lowlands and valley floors occur discontinuously along the coast of Guam. Valley floors penetrate inland at Agna, Pago, Ylig, Talofofo, Inarajan, Merizo, Umatac, and near Apra Heights. Most of the land in this unit is flat, and the main terrain features are low coastal scarps, beach berms, and natural levees formed by streams.

2. CLIMATIC FACTORS

Although the climate of Guam is uniformly warm and humid, there are distinctive variations in aspects of its weather and climate which could have significant effect upon the development of agriculture, industry, commerce, tourism, or other economic activity. The least variations are in temperature and humidity. Mean temperature variations are slight from month to month, and humidity generally varies between 65 and 80 percent in the late afternoon and between 85 and 100 percent at night. Temperatures during the day are usually in the middle to high eighties and in the middle to high seventies at night except for locations on the highest peaks.

Despite these uniformities, there are two distinct rainfall seasons: a dry season during the 5 months from January through May, and a rainy season during the 5 months from July through November. The mean annual rainfall on Guam ranges from 86 inches in the coastal area around Apra Harbor to about 112–115 inches in the highest mountain locations. From 15 to 20 percent of these annual amounts falls during the dry season and 68–73 percent in the wet season, although the percentages vary with the location on the island. About equally divided between the two transition months is the remaining 10 to 12 percent. Another variation in the rainfall regime results from the influence of topographic factors: elevation and exposure. The rainfall regime of Guam and its seasonal and areal variations are of critical significance to the feasibility of developing agricultural production on the island; it bears directly upon the problem of water supply for the population and for industry; and it further affects the development of tourism in various parts of the island. December and June are transitional between the two seasons. The two seasons also exhibit variations in wind and storm conditions.

Tradewinds are most pronounced and persistent during the dry season from January through May, during which time the winds blow from between the NE and ESE over 90 percent of the time. The tradewind flow is dominant in determining wind direction even during the period from July through October when winds tend to blow from every direction on the island. The greatest windspeeds occur during the tradewind period (with the exception of periods of tropical storms and typhoons). Surface windspeeds are not excessive, but winds of moderate speed are more common during the dry season than the wet season. The direction and speed of winds are relevant planning factors in the development of industrial facilities which have an odor or smoke disposal problem.

Extremely high winds accompanying tropical storms and typhoons are a more dramatic and critical climatic factor in the planning of economic activity on Guam. Two principal types of storms occur on Guam: small-scale storms, such as squalls and thunderstorms, and large-scale tropical storms and typhoons. Small-scale storms are short lived and may dominate weather conditions over a 10–20 square mile area, but the larger storms may dominate weather over 100,000 square miles and persist for as much as 2 or 3 weeks. The smaller storms do not significantly affect most types of economic activity anticipated for Guam, but the larger storms require specific planning to reduce the possibility of disruption and storm damage to facilities, equipment, and materials.

3. TYPHOONS

Tropical storms are closed pressure systems, about which the air moves counterclockwise in the northern hemisphere with wind speeds of from 38 to 75 miles per hour. Typhoons, similar to tropical storms, have winds of over 75 miles per hour. Both types are more frequent during the rainy season but have been known to occur in all months of the year. Their great intensity, extreme winds, heavy rains, floods, and "tidal waves" require consideration in economic development planning for Guam.

The probability of typhoons is greatest on Guam during the 3 months July through September, according to an analysis of past typhoon occurrences. They are least likely during the 4 months January through April, and intermediate in probability in May–June and November–December. Past analysis of typhoons has indicated that the chances of a typhoon of serious or mild destructivity (passing within 120 miles of Guam) is two in three in any particular year.

Chances are one in three that a seriously destructive typhoon will occur in any particular year, and one in five that Guam will be directly hit by a typhoon.

Typhoons that affect Guam vary seasonally as to their characteristics. From January through May, they are usually small and intense, with high-speed winds in excess of 75 miles per hour and only 25- to 50-miles radius. Typhoons during December, May, June, and July are larger, with high-speed winds extending out 50 to 75 miles from their center. The largest and most intense typhoons occur in August, September, October, and November, and have high-speed winds 100 miles out from their centers and may have sustained winds of 150 miles per hour or more within 25 miles of the center. Windspeeds tend to be higher on the right-hand side of the storm, with reference to the direction the storm is moving.

Wind damage, one of the chief hazards of typhoons, is dependent upon a number of factors, some of which may be difficult to take into consideration in agricultural, industrial, or commercial planning. In general, the most vulnerable locations during a typhoon are exposed beaches and small bays, localities lying in saddles that are approximately parallel to the direction of very strong winds, hilltops, and relatively flat open areas that are unprotected by dense vegetation. Topography thus is an important factor in determining where wind speeds will be highest and damage the greatest. Of course, wind damage is also often aggravated by the quality of construction in any particular area and the consequent amount of debris flying through the air.

A second factor in typhoon damage is that from flooding due to on-shore waves and "tidal waves." Nearly all typhoons in the Guam area move either from east to west or from southeast to northwest, and inundation during those storms will occur almost exclusively on the east and south coast for storms passing to the south or southwest and on the north and west coasts for storms passing to the north or northeast. When the center of typhoon crosses Guam, inundations will occur on the righthand side of the storm center along the coast of arrival and on the left-hand side of the storm center along the coast of departure. Thus a typhoon passing squarely across Guam from east to west will inundate the northeast and southwest coasts. Damage in coastal areas is also likely to result from unusually high surf as well as from flooding due to a rise in sea level. Surf damage is greatest in areas experiencing direct on-shore winds.

A third type of typhoon damage results from extremely heavy rains, with 10 to 48 inches of rain falling within a few days. Local flooding resulting from heavy rains may also occur during the passage of tropical storms, which occur at about the same frequency as typhoons in the area of Guam. Rains of 3 to 5 inches in a day may occur during such tropical storms.

4. WATER SUPPLY

The area south of a dividing fault in the middle of Guam is about 80 percent volcanic in origin. The lower reaches of streams in this area have deep valleys that have been filled with unconsolidated sediments with the bedrock as much as 200 feet below stream level. Surface flow of such streams may be low because of the slowness at which precipitation percolates through the clay soil. Dam construction may require deep excavations to bedrock. Whether this may cause excessive construction costs for reservoirs and dams along the surface streams can be determined only after detailed site examinations.

In general, the feasibility and practicability of developing surface water supply sources for agriculture in the southern portion of Guam are limited by serious construction and flow reliability problems. The catchment of wet season rainfall would complicate this problem in that additional capacity would have to be provided in storage reservoirs to contain high-volume runoff during the rainy season.

Sources of ground water on Guam include (1) perched limestone percolation formations, and (2) basal water stored in a modified Ghyben-Herzberg lens where the permeable limestone extends below sea level. Recent studies by Layne International also suggest the possibility of ground water occurring in southern Guam under conditions similar to the water lens under the northern limestone plateau.

Perched aquifer springs occur in areas where there are exposed faces at the contact between limestone overlaying volcanic intrusions of pyroclastics. Springs in southern Guam are utilized in Government of Guam systems or flow into the Fena Reservoir. The surface runoff of many streams are also fed by springs, bringing the minimum flows of those rivers to a higher level than would otherwise be possible in their limited watersheds.

The most important source of water in the northern half of Guam is the fresh water lens in the limestone plateau area. There is no surface water runoff in

the limestone plateau area, but limestone formations extending below sea level are a storage mechanism for fresh water, and their natural discharges have long been utilized for water supply. Initial estimates of theoretical yield on a Ghyben-Herzberg lens were 8 million gallons per day. This was based upon a theoretical average annual recharge of 2 million gallons per square mile and estimating 20 percent available recovery to allow for necessary outflow to maintain the lens. Later estimates are considerably higher: 26 million gallons per day recoverable from lenses in the limestone plateau area. Pending further investigation and study of the ground water source in the northern plateau lens, it appears that agricultural development in the northern part of Guam may anticipate an adequate supply of irrigation water after water supply development has been accomplished.

B. Climatic Factors in Tourism

Future development of tourism on Guam will be chiefly influenced by the effect of sensible temperatures, humidity and rainfall upon outdoor activities. The design and construction of resort and recreational facilities, moreover, should take into account the possibilities of high winds and wave damage during the typhoon season.

As indicated in the preceding section on "Climatic Factors," sensible temperatures and humidity are uniformly high (for individuals accustomed to midlatitude climates) both day and night in Guam. Air conditioning is therefore essential for modern resort facilities; and planning for recreational facilities should also take into account the need for shelters, rest areas and refreshment centers wherever visitors are likely to be engaged in any kind of physical activity. Warm nighttime temperatures, however, should permit the incorporation of outdoor dining and entertainment areas (such as is done in Hawaii) in the design of resort hotels.

The possibility of occasional days of "steady rains" during the wet season from July through October, added to the higher probability of typhoons during that period, suggests that the dry season from November through June would be the most favorable for tourism. However, conditions in the wet season are sufficiently favorable to allow tourism then also. Although rainfall does occur during the dry season, it is highly localized, in the form of light showers and short in duration. Therefore, rainfall would be of temporary inconvenience to visitors, and the provision of adequate light shelters would enable them to "wait it out." In general, the November-through-June "dry season" coincides with tourist seasons elsewhere (e.g., the cherry blossom spring in Japan, the summer of Australia and New Zealand, and the winter of the northern United States). Being also the season when typhoons are least likely to occur, the November–June period would comprise the safest period of travel in the Micronesian Islands. Finally, prevailing winds in the dry season are tradewinds which blow fairly steadily from an easterly direction, modifying the effect of high temperatures and affording relief from insects.

The likelihood of severe tropical storms and typhoons in the "wet season" and the resultant damage to tourist facilities should be taken into account when planning the location, siting, and construction of such facilities. The preceding section on typhoons indicates the past experience in wind damage on Guam. Another type of damage may be caused by wind waves, particularly to tourist facilities located on shore and lowland sites.

Wind waves come chiefly from the northeast to southwest and are influenced mainly by the trade winds. Normal trade-wind waves are low (less than 2 feet) to medium (less than 9 feet) in height and are commonly less than 5 feet. Occasional calms are common from April to September, but periods of more than 2 to 3 days of calm are rare. Wind waves higher than 6 feet are usually associated with tropical storms.

Waves generated periodically by storm centers as much as 1,000 miles from Guam may occasionally cause considerable damage. Typhoons moving westward after they have passed to the north or south of Guam most commonly cause storm waves that cause damage. The possibility of damage by storm-generated waves should be taken into account in development of tourist facilities in coastal lowland areas. For example, large waves generated by a typhoon 350 miles north of Guam damaged Marine Drive and a number of buildings near Asan, Piti, and Agana. The waves that flooded Marine Drive passed over the reef flat more than 2,000 feet wide. In 1952, the Glass Breakwater was damaged by waves generated by a storm off the coast of Japan 1,200 miles northwest of Guam. In 1953, three typhoons with wind intensity of 58 miles per hour passed within 200 miles of Guam, yet damage to the Glass Breakwater was caused by typhoons at least six times during 1953.

C. Environmental Factors in Industry and Commerce

The development of manufacturing and commercial enterprises on Guam will require consideration of environmental factors in the location and siting of facilities. Construction and equipage of those facilities should take temperature and humidity factors into account to minimize problems of fungi and corrosion damage as well as to provide for adequate comfort for employees. Facility sites should be selected with reference to potential damage resulting from high winds and flooding in future typhoons as well as from the standpoint of load-bearing capacity.

With temperatures moderately high, the high humidity of the air on Guam presents some problems in protecting equipment, facilities and materiel from the destructive effects of corrosion, mildew, and condensation. The relative humidity on Guam generally exceeds 84 percent during the nighttime in all months of the year, and even during the warmest time of the day the average humidity is at least 66 percent in every month. As with temperature, there is little variation in humidity from one season to the other. The dry season is only a little less humid than the wet season.

Deterioration due to high humidity can occur in optical instruments, electrical equipment, textiles and textile equipment, leather, natural and synthetic rubber, wool, silk, some synthetic fibers, synthetic resins, paints, varnishes, asphalt, waxes, lubricants, hydraulic fluids, and wood and wood products. Unless industrial materials are retained in stock for long periods, however, it is not expected that manufacturing or processing operations using reasonable precautions would experience any adverse effects. Damage due to the growth of fungi is promoted by the warmth and high humidity and is aggravated by darkness and poor ventilation. Nighttime hours are the most critical because conditions of very high relative humidity combine with calm wind conditions to promote the condensation of moisture on the surface of goods and equipment which have not been protected by either air conditioning or a heat locker. In addition to the destructive effect of fungus growth, of course, condensation itself will be particularly damaging to electronic and other types of equipment. The requirement for protection against humidity thus must be considered on a 24-hour basis for any economic activity using equipment and material on Guam.

In addition, metal goods are subjected to damage from corrosion, which is accelerated by warmth, high humidity, and the presence of salt particles in the air. It may be expected that industrial and manufacturing sites located in lowland areas in Agana and Apra Harbor will experience air that is heavily laden with salt particles.

Insufficient data are available to specify the detailed effects of high humidity and temperature upon the working efficiency of labor in Guam. But it is estimated that people working indoors in unventilated quarters on Guam would find still air conditions oppressively hot and uncomfortable most of the year. In non-air-conditioned quarters, the critical variable is air movement since the temperature and humidity generally remain above the sensible comfort level for most workers (temperature above 80° and relative humidity above 60 percent). Since higher windspeeds can only be expected during the dry season, the design of working facilities should include either provisions for artificial ventilation or air-conditioning. Since the latter is indicated to combat the effect of humidity on equipment and material, it is probable that any facility designs should take air-conditioning into account—except in those cases where such provisions are definitely uneconomical.

Terrain factors influencing the planning of industrial or commercial facilities are those concerned with the selection of construction sites, the availability of construction materials, and the availability of industrial raw materials. Construction sites for industry and commerce are likely to be sought in the coastal lowlands, some of the river valley floors and plateau areas. Construction on coastal lowlands and beach areas will probably not encounter any problems in drainage control but may require provisions for protection from flood waters. Excavation conditions are good, easily accomplished with hand and power equipment, but there may be tendencies toward slumping and sliding. Bearing capacities for foundations are generally fair to good over bedrock, but stabilized support may be required on beach sands over limesand subsoil in marshy areas.

Construction on river valley floors should consider the poor bearing capacity of clayey alluvium in early level marshy floodplains and alluvium flats in coastal coves and limestone basins. Footings for heavy installations will require stabilization, and drainage protection and piling support may be required in wet subsoil.

Site drainage and protection against flooding may be necessary during heavy rains in the wet season. Some problems may be encountered in excavating saturated clays as well.

On limestone plateau areas, construction problems are chiefly associated with excavation which may be difficult even with power equipment. Some blasting may be necessary. No drainage control should be needed, and load bearing capacities are generally excellent. Shallow limestone caverns are locally common, however, and the underfooting of foundations should be investigated carefully.

Sources of aggregate for construction materials are very good in compact limestone areas and in areas of lava flows and dikes.

Raw materials for manufacture are generally lacking on Guam. Coraline limestone of the plateau area is considered good as binder in the manufacture of cement. Use has been made in the past of clay deposits for the manufacture of building brick and tile, but further study will be required to determine the economic value of the deposits.

D. Environmental Factors in Agriculture

The preceding discussion of landform types suggests that four types of area may have suitable locations for crop production or livestock grazing. Combinations of slope and relief suitable for commercial crop production or the growing of grain occur in the plateau areas, dissected sloping and rolling land, in portions of the interior basin, and in parts of the coastal lowland and valley floors. Local relief is probably too great for crop production in the hilly lands. Slope and relief should be suitable for development of irrigation in the areas of low relief and slope in plateau areas, dissected sloping and rolling land, and on coastal lowlands and valley floors. The influence of slope and relief is considered in conjunction with vegetation, soil, and land-use factors in the assessment of land capabilities for agriculture below.

Insolation and illumination influence the effectiveness of solar radiation in the form of heat and light and as such have relevance to agricultural development on Guam. Many of the local commercial crops whose production might be expanded on Guam would be raised the year around, but conditions of insolation may affect the quality of some crops. The period between sunrise and sunset on Guam ranges from 12 hours and 56 minutes at the summer solstice (June 21) to 11 hours and 19 minutes at the winter solstice (December 22–23). Civil twilight is almost constant, between 22 and 24 minutes. Thus the period of daylight available for outdoor work without artificial illumination is about 12 hours in late December to over 13½ hours in late June. Of course, specific locations may have slightly different times because of mountain shadowing.

However, unobscured bright sunlight (an important factor in agriculture) is not usual on Guam due to prevailing cloudiness. Cloudiness together with high amounts of water vapor result in considerable reflection and absorption of incoming solar radiation than is usual at most places in the world. These limitations should be considered in assessing the feasibility of growing any crop which needs a high number of temperature degree-days for maturation.

To a considerable extent, future agricultural development on Guam will depend upon the correct assessment of the significance and effects of weather and climate and the associated availability of an adequate and cheap water supply. The seasonal character of Guam's climate and the division of the year into wet and dry seasons suggest that the development of high yields and quality crops will not permit reliance on the natural rainfall regime, but that adequate agricultural water supply sources will have to be developed. Current studies of the water sources in both the northern and southern parts of the island indicate that such development should be possible without excessive capital costs to the government of Guam and without excessive prices for irrigation water. Although many commercial crops may be grown the year around on the island, the variations in solar insolation should be considered for crops with high degree day requirements for maturation. Conditions of very high humidity which obtain most of the year will require close attention to the storage of agricultural products. Finally, it will be necessary to select locations for agricultural development with care to alleviate, insofar as possible, the periodic damage from typhoons and tropical storms.

E. Land Use

Detailed large-scale maps, produced by the Planning Division of the Department of Land Management of the Government of Guam,[1] are available for the guidance of individuals, private and public organizations concerned with land use on Guam.

1. RURAL LAND USE

Almost half of Guam is covered with mixed wood and brush (47 percent), and another extensive area consists of open land or pasture (41 percent). Coconut groves comprise another 11 percent, but cultivated land constitutes only a little over 1 percent of the area. The area in cultivated land is significantly larger than indicated because very small subsistence gardens in Agana and other populated areas are not measured or surveyed.

Urban land use is depicted on the land-use maps in the following categories: Single-family residential, multifamily residential, commercial, industrial, public, semipublic, roads, and conservation. Nonurban land use includes open land and pasture, coconut, swamp or marsh, mixed wood, and cultivated land.

The ecological characteristics of the mixed wood and brush category differs on the limestone plateau area from that growing on volcanic soil in the south, but both are essentially broad-leaved evergreen tropical forests dominated by large trees of wild breadfruit and banyan. Undergrowth in the mixed forest is usually sparse and may be fairly tall where the forest is little disturbed but could be fairly dense where it has been disturbed. The forest in the south is generally low, seldom over 40 feet, and the canopy is dense to irregular.

Open areas on Guam are comprised of savannas, pasture, or bare ground and shrubby vegetation near military installations and built-up areas. Savannas are made up of a mosaic or grassland, herbaceous vegetation, and erosion scars. Swordgrass is dominant over large areas of open land, is extremely dense, and the well-developed stands may be hard to traverse on foot. In general, swordgrass is unsuited for forage, although stock can eat the young leaves. A second type of swordgrass is yellow foxtail—a low, tufted, soft, hairy grass of a bluish-green color, with flowering stems. It is often used as pasture but will not support many animals since *Dimeria* is not first choice for forage. Other vegetation types found in the savanna are shrubs and tangled ferns in erosion scars, tangantangan thickets scattered in many areas, or communities of weedy herbaceous vegetation. Tangantangan is considered a nuisance but it offers definite possibilities as a pasture plant.

The other type of open ground includes a mosaic of pastureland, very small cultivated fields, weed patches, and shrubby growth. Areas around military installations (particularly those that have been abandoned) may be of this type and will include bare areas of building foundations, abandoned runways, hardstands, and roads.

In coconut groves, trees were planted from 10 to 30 feet apart but are now often closer due to self-seeding. The canopy is from 50 to 75 feet high, and the undergrowth is usually dense (often 4 or more meters high) and composed of various shrubs and young trees. Copra production of the groves is nonexistent and most of the groves on the island have been affected by a disease which adversely affects the size of the mature nuts. Since the competitive position of Guam in possible future copra production is considered very poor, coconut groves constitute an unproductive use of land in areas of good soil and present a clearing problem. However, they are a valuable asset from the standpoint of esthetics and as shade trees. Coconut groves along the southeastern and southern coasts will, with judicious thinning, undoubtedly enhance the value of coastal sites for recreational and tourist purposes.

Cultivated land, comprising a little over 1 percent of the rural land area of Guam, represents the limited amount of commercial crop production presently being conducted on the island.

In most cases, crops on representative commercial farms visited during the study period were planted to commercial vegetables (tomatoes, cucumbers, eggplant, watermelon, onions, beans, Chinese cabbage, yams, and sweet potatoes). Agricultural practices varied widely, and all but one farmer depended upon

[1] "Urban Land Use," Planning Division, Department of Land Management, Government of Guam, no scale, 1964; "Nonurban Land Use," Planning Division, Department of Land Management, Government of Guam, no scale, 1964; "Government-Owned Land," Planning Division, Department of Land Management, Government of Guam, no scale, 1964; "Vegetation, Guam, Mariana Islands," AMS W7458, Military Geology Branch, Intelligence Division, Office of the Engineer, Headquarters U.S. Army Japan and U.S. Geological Survey, 1:50,000, 1954.

rainfall. None of the farmers maintained records to establish the degree of success or failure with land management practices recommended by the Department of Agriculture; no cover cropping was practiced; and the only crop rotation practiced is cropping followed by allowing the land to lie fallow for 6 months or longer. In some truck farms, no rotation is followed at all: the same crop is grown season after season on the same plot of land. Most farmers use some form of organic or inorganic fertilizer. Some chicken fertilizer is used, as well as a balanced commercial chemical fertilizer in various combinations. Due to efforts of the Department of Agriculture to promote the use of fertilizer, amounts applied to commercial farms have been increasing: 68,000 pounds in 1963; 86,000 pounds in 1964; and 120,000 pounds expected to be used in 1965. Lime is usually not required in the calcareous soils of the north but is used to a limited extent in the slightly acid soils of the south.

No form of contour plowing or other type of erosion control is practiced, and furrows are plowed straight across slopes. No drainage tile is used, although the Department of Agriculture is experimenting with its use. Despite efforts by the Department, little pest or disease control is carried on, except with the major vegetable crops.

2. URBAN LAND USE

The pattern of urban land use in the west-central part of Guam is shown in figure 2. Public land is classified by ownership or jurisdiction, but those classifications reflect the dominant use of the land. Large-scale maps of urban land use are available from the Department of Land Management and show usages in considerable detail.

One of the most distinctive characteristics of urban land use is the "strassendorf," or strip development, along the major arteries. The major area of commercial activity is along Marine Drive from Anigua, through Agana and into Tamuning. Virtually all establishments front on Marine Drive or are, at most, a block away. A second concentration is found near the intersection of Marine Drive and Route 6 in Agana, and another strip development is beginning along Route 8 toward Barrigada. An extension of the Agana commercial strip development fronts Marine Drive from Asan to Piti and another may be found along Route 6, bordering Agana Heights and Sinajana. The fragmented and haphazard placement of both residential and commercial developments reflects a past lack of zoning regulation, although the pattern of development (and the lack of it) in the Agana area is due largely to the problems of land fragmentation in that location. Two areas of multiple-family dwelling units are shown on the map—an older area in the triangle between Marine Drive and Route 8 and on the Tamuning sea terrace where a number of apartment and other multiple-family dwellings are being developed. In nearly all areas (with the possible exception of the more recent subdivisions in Tamuning), dwellings may vary from simple, poorly constructed frame houses to concrete block houses of post-Karen construction.

Elsewhere on Guam, the pattern is one of concentration of single-family dwellings in fairly compact villages, usually centered around the church. Villages which suffered bombardment damage during the 1945 liberation of Guam or which experienced extensive typhoon damage in 1962 have a larger percentage of newer dwellings. Examples of these villages are Agat, Dededo, and Santa Rita. Inarajan, Barrigada, Merizo, Sinajana, and Agana Heights are more representative of villages with older housing. Commercial services in the villages are usually limited to a few single-room, family-run retail stores which carry food items and some clothing and drugs. Needs for major clothing, appliances, drugs, and other items are usually filled in Agana or Tamuning retail specialty shops.

Major areas of commercial activity are Agana, Tamuning, and Anigua; secondary centers are Barrigada, Sinajana, and Asan-Piti. Agana has the major multipurpose shopping centers, but there is a tendency for shopping centers and the newer specialty stores to locate in Tamuning, Barrigada, or Anigua, possibly because of land acquisition problems in Agana. Commercial facilities vary from very poor to good in construction and design, with indications that recent construction is intended to minimize future typhoon damage.

"Public land use" refers to activities carried out by the government of Guam. In the area around Agana, it includes governmental offices, the Paseo del Susana park, school facilities in Barrigada, the Guam Memorial Hospital and, in Tamuning, various warehouses and workshops of governmental departments. A continuing program to replace pre-Karen quonset huts and other low-quality buildings with new typhoon-proof construction has resulted in the gradual im-

FIGURE 2.—Urban land use.

provement of public land use. Problems associated with the ownership and use requirements of public land are discussed below.

F. Land Capability

1. PURPOSE AND BASIS OF CAPABILITY CLASSES

The assessment of potential leverage investments and actions depends partly upon the capability of agricultural and urban land in Guam to support those activities. Of course, land capability is more critical in evaluating the potential for agricultural development; but it is also important in assessing the potential for commercial and industrial development. The land capability classification described here is directed primarily toward an assessment of Guam land for agricultural uses.

Agricultural land capability classes were developed by analyzing the only available soil survey for Guam, together with consideration of previous studies and recommendations for the utilization of rural land on the island. For the most part, the feasibility studies for agriculture were taken as guiding assumptions in evaluating the criticality of various land characteristics. However, since the feasibility studies consider a full range of agricultural possibilities, it is felt that the capability classes represent a realistic evaluation of land on Guam. The development of these classes was limited chiefly by the lack or inadequacy of production data for the crop combinations possible for Guam. It has not been possible to establish yield predictions for specific soil types and phases, nor to determine sets or levels of farm management practices for Guamanian farmers. The drastic change in agriculture following Typhoon Karen also suggests that previous U.S. census and other data are not sufficiently representative of present farming on Guam to be used as a base. In order to establish a base from which to evaluate the feasibility of agricultural production and to assess the capability of Guam's land to support such production, an analysis was made of soils and agricultural production of areas in Puerto Rico and Hawaii which appeared most analogous to the situation in Guam. Many locales in those islands are very similar in climate, soil, drainage, water supply and topography to Guam. However, the land classes described below concern only the capability of the land to support proposed agricultural production; the classes do not purport to assess the feasibility of such uses. Many other factors (including entrepreneurial capability, availability of low-cost labor, and access to capital) affect the feasibility of agriculture as a leverage investment.

In addition to the analogy studies mentioned above, the land capability classes included an analysis of soil and land characteristics with regard to present use, recommended use, drainage and soil moisture, slope and relief, soil depth, erosion and flooding, vegetative cover, irrigability, special composition features, prevous land class categories, fertilizer requirements, liming requirements, farm management practices, and a survey of representative farms on Guam.

2. AGRICULTURAL LAND CAPABILITY CLASSES

Figure 3 shows the distribution of agricultural lands on Guam according to the capability classification given below.

Class I: Soils well suited to truck and tree crops:
- A. Well suited to irrigation.
- B. Requiring drainage, floor, or erosion control under irrigation.

Class II: Soils fairly suited to truck crops:
- A. Suited to irrigation.
- B. Requiring drainage, flood, or erosion control under irrigation.
- C. Unsuited to irrigation because of erosion or flooding hazard.

Class III: Land suited to grazing.
Class IV: Land suited for forest and conservation.
Class V: Rock land and filled land.

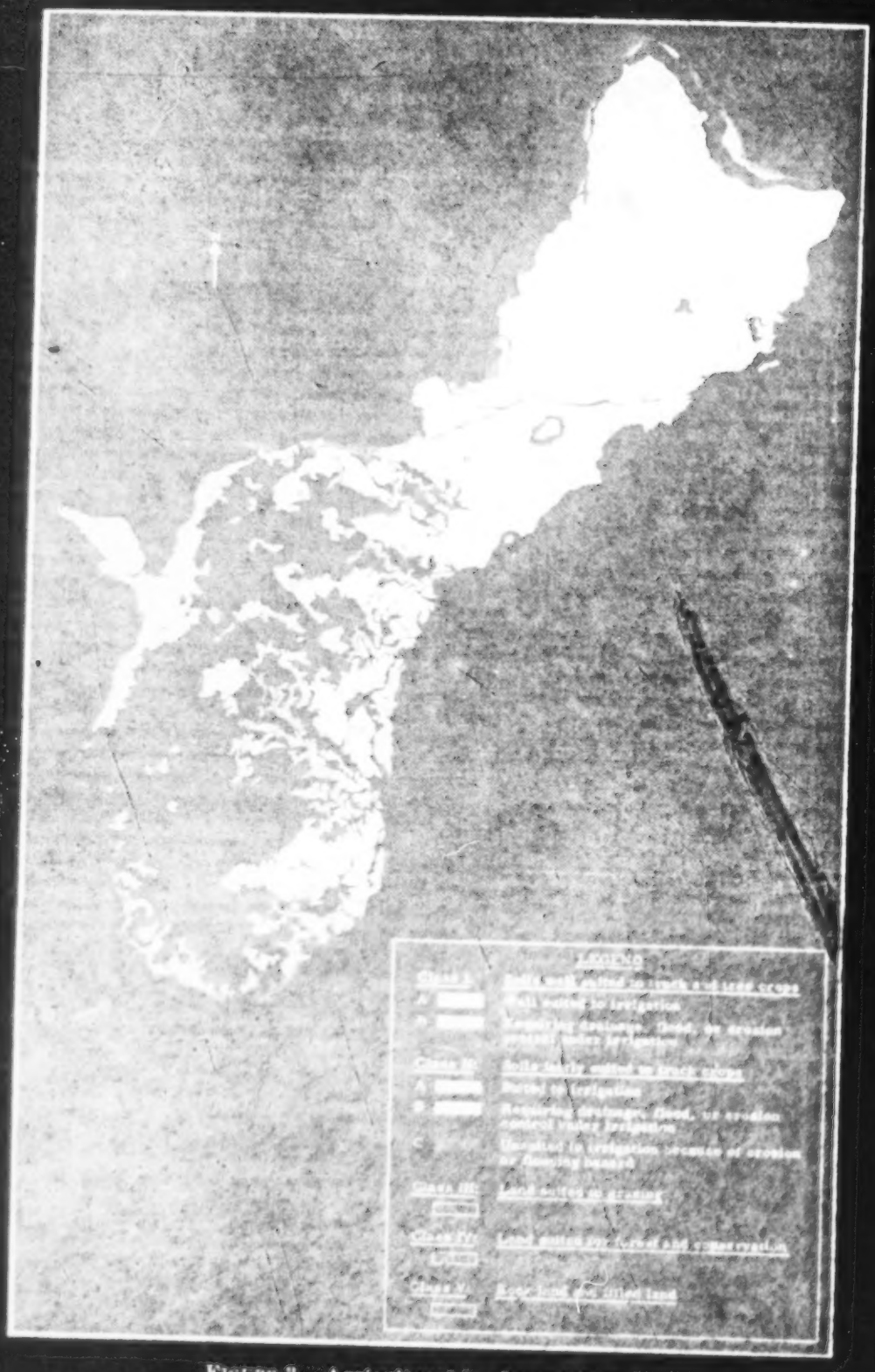


FIGURE 3.—Agricultural land capability.

The soils in class I have been under cultivation for many years, and truck crops and fruit trees have been successfully grown on it in the past. This soil varies from shallow to deep, and areas of deep soil have good moisture retention. With adequate irrigation, employment of crop management practices, and control of sheet erosion tendencies, class I–A lands should be suitable for truck crops which require well-drained, fairly deep soils with good moisture retention. Class I–A is also suited to tree crops, but lack of protection from winds may detract from that use. Class I–B lands have a higher classification with regard to natural fertility tilth and depth, but they require special attention to occasional severe flooding, patches of perennially wet ground and erosion. Furthermore, Class I–B lands are not as accessible as I–A lands and are covered with dense jungle growth which might impede clearing for agricultural purposes. Class I–B is suited to most truck crops requiring deep, well-drained soils which can be irrigated and to tree crops which require protection from winds.

Class II lands are considered fairly suited to truck and tree crops. Class II–A lands are the most extensive on Guam, are mostly covered with second-growth mixed forest and shrub, and tend to be shallow. Where these lands are of sufficient depth, they are fairly suited to truck crops and to citrus if planted in areas protected from winds. The soils have low moisture-holding capacity, are very permeable, and would require irrigation from January to May for adequate productivity. The high permeability of the soil will also require the use of overhead sprinkler irrigation and an extensive pipe system. The cost factor of irrigation may be sufficiently high to discourage extensive use of this area for truck and tree crops.

Class II–B lands include four soil types of moderate fertility which would require appropriate farm management practices to control tendencies toward erosion or flooding. Two of the soils of class II–B (soil types 4 and 6; see reference study) comprise rolling upland lands suited to most truck crops if irrigated and provided control of a tendency to moderate or severe gullying and sheet erosion is maintained. The remaining two soil types in class II–B (soil types 10 and 11) are wet, poorly drained soils of the coastal and valley flats. Although fairly productive for truck crops and trees suited to wet soils (rice, taro, onions, peppers, etc.), extensive drainage would probably have to be provided for extensive use. Class II–C land is considered unsuited to irrigated farming because it has poor moisture supplying capacity, is relatively infertile, and is subject to local damage from wind, salt spray and sea storms.

G. Land Availability

1. Land ownership

Two major ownership problems complicate the development of land in Guam—the control of public lands and the conditions under which land can be used for private purposes; and the pattern of private landownership and the problems of land fragmentation and transfer. This section will discuss the problems related to the use and transfer of public lands, the private land ownership pattern, and the availability of land by capability classes as described above.

(a) Public lands

The ownership of about 27,250 acres of public land on Guam rests with the territorial government of Guam, but the permitted use and disposability of those lands has long been uncertain and confused. In an attempt to clarify this problem, the department of land management prepared a report on the public lands of Guam[3] and undertook a program of land surveying designed to tie in public and private lands into suitable survey net. The study and resulting report were undertaken to advance the government of Guam's case for an accelerated turnover of land still held by the Department of the Interior and by the U.S. Navy and to urge a relaxation of reversionary limitations on the ultimate use of land acquired by the government of Guam from Interior. At the present time, specific exceptions must be obtained from Interior in each instance where land is not to be used for a previously specified purpose.

Reversionary provisions specify that the government of Guam may (without approval of the Secretary of the Interior) sell, lease, or dispose of certain lands for rehabilitation and resettlement, or for homesteading, conservation, recreation, or public purposes. Any other use of these lands would require their reversion to Interior control and ownership. Specific releases from the reversionary pro-

[3] "Report on the Public Lands of Guam," planning division, department of land management, government of Guam, July 1964.

vision required a year or more to process and have, in some instances, had to be reprocessed when any change in the proposed use was made. Although the government of Guam does not anticipate the wholesale disposal of land, several instances have been cited in which opportunities for industrial, agricultural, or commercial development were missed because of the time-consuming and complex process required to obtain a release from the reversionary procedure.[4]

Although land management indicates that planned urban extensions, agricultural subdivisions, parks, recreational and conservation areas, roadway extensions, utility facilities, and major governmental building facilities may be largely developed on existing public lands, significant portions of the plan may require government acquisition of private property. This acquisition, it is pointed out, can be best effected by the government being in a position to reasonably negotiate immediate property exchanges. But this cannot be done since the government of Guam has but a very limited amount of land for exchange purposes.[5] In attempting to carry out the planning function, land management thus found an "inability to reasonably determine the exact extent of or placement of public lands in order to ascertain its field condition and availability, and * * * an inability to understand what lands may or may not be released."[6] To alleviate this situation, land management undertook the inventory of public lands described in the report and made a number of recommendations regarding the procedures for handling public lands.

Four specific actions were recommended to "alleviate indecision and confusion relative to the provisions of land transfers to the government of Guam and at the same time to permit the government of Guam to proceed with its development plans and policies in an expeditious manner * * *."[7] They are—

1. Secure an interpretation of Public Law 225 (act of 1945 to) include all public lands not required for military or naval purposes.
2. Effect an understanding with the Secretary of the Interior that inasmuch as Public Law 225 included all Federal properties on Guam not needed for military or naval purposes then section 28(b) of the organic act is inoperative except for the referred personal property and the tidelands of the territory.
3. Secure from the Secretary of the Interior amendments to the restrictions imposed on the government of Guam in the utility and disposal of the public lands.
4. Initiate procedures to accomplish a systematic survey and subsequent registration of all Government and private properties.

In the case of the first and second recommendations, the government of Guam is proposing that provisions of Executive Order 10178 (transferring certain U.S. lands to the Secretary of the Interior) included all U.S. lands not required for military or naval purposes and hence no specific listing of lands so transferred should be necessary. Instead, the transfer should involve the total inventory of U.S. lands less those under the administrative control and jurisdiction of other Federal agencies, and less the territorial tidelands. Modifications to restrictions to the use and disposal of former U.S. lands referred to in the third recommendation will, in the view of the report, permit the government of Guam to (1) continue with permissive disposals; (2) continue the right to use lands for public facilities; (3) develop public lands into subdivisions in accordance with the territorial subdivision law; (4) dispose of land in exchange for private property designated to be acquired for public uses at a maximum ratio of 2 meters of Government land for 1 meter of private land; and (5) dispose of land for development projects which clearly demonstrate enhancement of the economic structure of the territory.[8]

The final recommendation concerned the need for a survey and registration of all government and private properties, and this need was the ostensible reason for breakdowns in negotiations between the government of Guam and the Department of the Interior. There is little doubt that such a survey is critically needed; nor is there doubt that it will require a considerable amount of time to accomplish. Nonetheless, the Department of the Interior reportedly refused to consider recommendations to clarify the transfer of public lands or to modify the rever-

[4] Disagreement among the government of Guam, the Navy and the U.S. Department of the Interior concerning the status and ownership of public lands on Guam continues up to the time of the preparation of this appendix.
[5] Report on the Publics Lands of Guam, p. 2.
[6] Ibid.
[7] Ibid., p. 13.
[8] Ibid., p. 15.

sionary procedures until the government of Guam could accomplish an up-to-date survey of all lands concerned.

Although this survey has been initiated, complications and delays have slowed progress. It is estimated that a complete land survey might involve from 15 to 20 years of work (when the low budget priority of the survey work and difficulty in obtaining qualified personnel are considered). As of mid-1965, Land Management had not been able to find a replacement for a Government surveyor who resigned last year after unsuccessfully trying to cope with the survey problems. To date, a U.S. Coast and Geodetic Survey primary and secondary triangulation net has been established, and Land Management survey teams have been running traverses from those primary and secondary points along the island roads. The next step in the survey will be to tie all public and private land parcels into the new control net, as each new land registration must now do. Although the area and bounds of individual land parcels are admittedly inaccurate (originally described in terms of metes and bounds), it is felt that the reluctance of Interior to take action on the land problem recommendations is based upon the inadequacy and inaccuracy of tie-in controls for the individual land parcels.

Future progress on accomplishing the tie-in of private and public lands to the newly established triangulation nets will evidently depend upon the tempo of economic development. The policy of the government of Guam at present is to simply require all private land to be tied in before it can be registered, but little is being done to tie in government land. Current policy is to choose those public land parcels which appear to have greatest potential for development, tie them into the net and proceed to another increment. It is estimated that the registration and tie-in policy on private lands will result in possibly 20 to 30 percent of private land being tied in over the next 5 years. No estimate is now possible on the length of time needed to tie in public lands.

If public lands were limited in extent or poorly located with respect to potential agricultural, commercial, or industrial development, the significance of the public lands problem would not be critical to the future economic development of Guam. Figure 4 shows the distribution of public lands, and the areal extent and ownership status of those lands are described below. In a following section, the availability of public lands for economic development will be considered in the light of their capability to support various types of economic activities.

Figure 4 also shows the distribution of Government-owned lands and private lands on Guam. The status and areal extent of each land category are as follows: [1]

1. *Lands for which clearance on use and disposal is required from Washington, D.C. (23,876 acres, 83 percent of all public lands—excluding military—on Guam).*—The status of lands in this category are of two types:

(*a*) Public lands transferred to the Government of Guam by the Secretary of the Interior but whose use and disposal are subject to reversionary provisions discussed above, and which require Secretary of the Interior approval for specific exceptions to disposal (19,791 acres, or 68.8 percent of Government land).

(*b*) Public lands which existed upon the enactment of the Organic Act, but which were not included in the transfer to category 1(*a*) above. These lands are still controlled by the Navy, but were not included within the land squares, sections, and units description of lands transferred to the Government of Guam by the Secretary of the Interior. Upon such transfer, these lands would be placed in category 1(*a*) above (3,304 acres, or 11.5 percent of Government land).

(*c*) Public lands approved for disposal by the Government of Guam, but on which reversionary provisions still apply (781 acres, or 2.7 percent).

2. *Government of Guam land (777 acres, or 2.7 percent of public lands).*—This land category consists of two types:

(*a*) Public lands transferred to the Government of Guam by section 28(a) of the Organic Act and released by the Secretary of the Interior on October 31, 1950 (449 acres, or 1.6 percent). No reversionary limitations apply on the use or disposal of these lands by the Government of Guam.

(*b*) Lands acquired by the Government of Guam subsequent to the enactment of the Organic Act through tax forfeiture, negotiation, or purchase (328 acres, or 1.1 percent). No reversionary limitations apply to these lands.

3. *Conservation reserves (4,098 acres, or 14.2 percent).*—These lands are reserved for conservation purposes by the Government of Guam.

[1] All figures are from Report on the Public Lands of Guam.

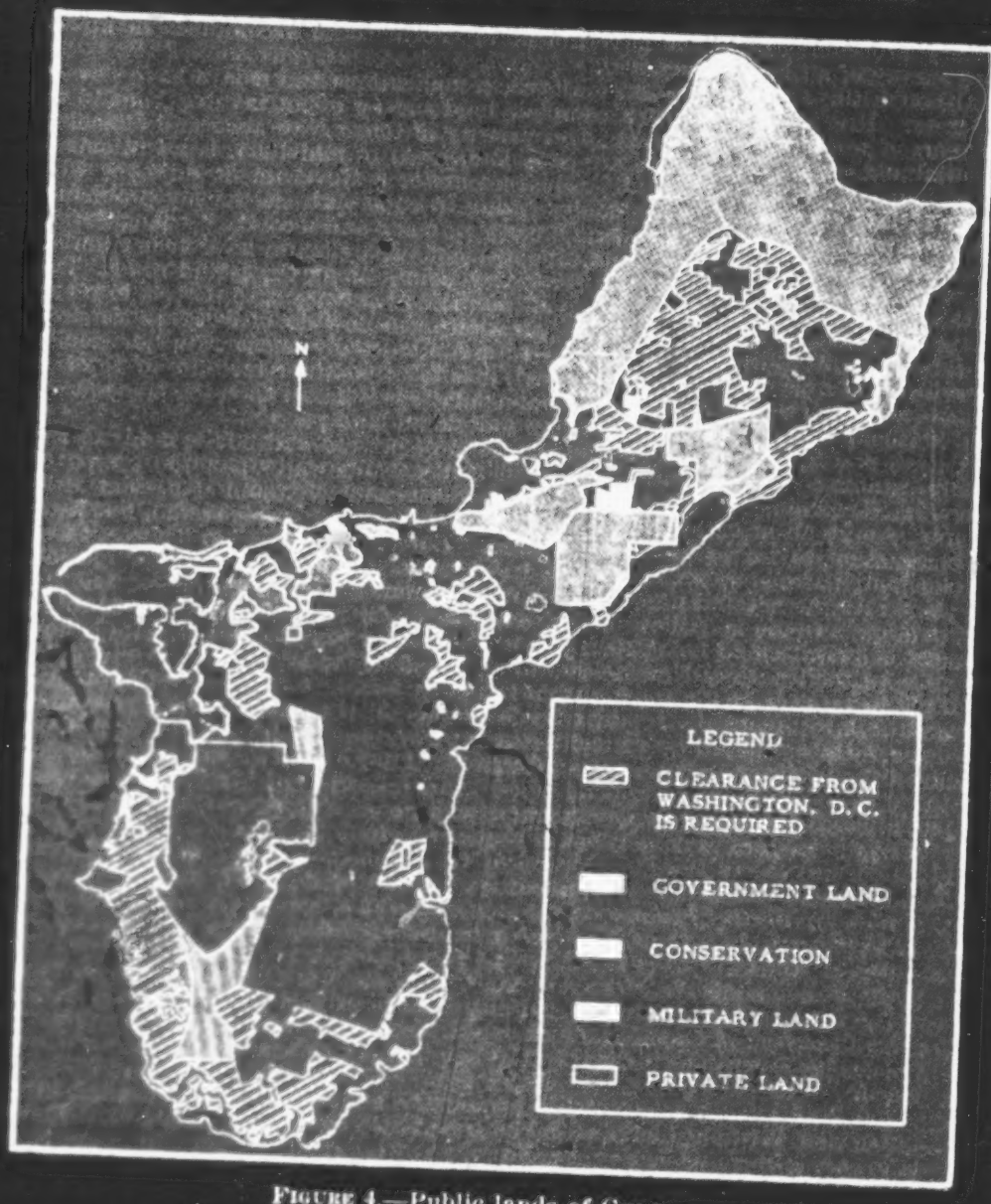


FIGURE 4.—Public lands of Guam.

(*b*) *Private land problems*

(1) *Private land: Size and turnover.*—The distribution of privately held land is shown in the urban land-use map (see fig. 2), and the characteristics of private land use were discussed in the preceding section. The distribution of residential, commercial, and industrial land in the land use map suggests the scattered and small-scale character of land parcels. In general, land parcels between 5 and 9.9 hectares comprise about 55 percent of those tabulated, 25 percent in the 10 to 19.9 hectare group, 8 percent in the 20 to 29.9 hectare group, 6 percent in the 30 to 49.9 hectare group, 4 percent in the 50 to 99.9 hectare group, and 1 percent between 100 and 250 hectares. Less than 1 percent is as large as 250 to 500 hectares. Only two land parcels are as large as 1,000 to 5,000 hectares, and none are recorded for the 500 to 1,000 hectare group. A high number of the smallest sized land parcels are in Sinajana, Dededo, Inarajan and Umatac. The distribution of very small-sized parcels would, of course, be very high in the Agana area because of the extensive degree of land fragmentation.

In the turnover of unimproved land, the number of parcels sold in the 0.05 to 0.5 hectare range show the greatest activity. Again, Sinajana and Dededo are the municipalities in which sales of unimproved land are highest.

(2) *Characteristics of private lands.*—The characteristics of private lands with regard to land values and their variation, fragmentation problems, locations and traffic densities are presented in this section for Agana, Dededo-Tamuning, Sinajana, and Asan-Piti. This information, based upon the personal knowledge of an experienced real estate operator and land appraiser in Agana, is incomplete but will demonstrate the variation in land values and real estate problems from one urban area to another in Guam.

(*a*) *Agana.*—For the most part, private land is unavailable in Agana for residential purposes because of high land values, problems associated with extreme land fragmentation and with fractional ownership. Land fragmentation in Agana came about as a result of the superimposition of new street grids and property parcel lines by the Navy on the long-established grids and lines of pre-war Agana. As a result, current plat maps of Agana display a confusing mosaic of new and old streets, new and old property lines, and a former river channel. Tax assessment rolls literally carry pieces of property in Agana which are only 1 meter square and some that may be 1 meter wide by 200 meters long. The assembly of usable land under such circumstances is difficult and time-consuming. Complicating this situation is a long-standing tradition among Guamanians to retain title to a parcel of land in Agana regardless of its size. Compounding the problem further is a Guamanian cultural trait to allow inherited parcels of land to remain unprobated; any given parcel may thus have multiple owners, some of whom may have died and whose wills in turn are unprobated. The magnitude of work required to assemble land for any purpose in Agana is therefore considerable. For example, the parcel of land under Ada Plaza in Agana is only about 50 feet deep by 200 feet long but required 3 years of work to assemble. Commercial land development suffers from these problems and from high land values due to the scarcity of property. It is estimated that property sells for $25 to $100 per square meter, depending upon location and frontage.

The fragmentation problem in Agana has long been recognized and recommendations have been advanced to take governmental action. In July 1965, a $550,000 Federal Land Transfer Fund was made available to resolve the fractional lot problem. The approach of the Department of Land Management would authorize the government of Guam to acquire fractional lots by purchase, gift, or eminent domain. Since there is a strong aversion to the latter device, attempts are being made to accomplish the consolidation of Agana fractional lots through negotiated purchase or through its land exchange authority. In the case of land exchange, the government of Guam must decide what land under its control it will release for exchange purposes and the value of that land. It must determine the price that the government will be willing to pay for Agana property.

(*b*) *Dededo-Tamuning.*—The Dededo-Tamuning area is one of extensive activity in residential construction. The major subdivision developments on Guam are in this area, with unorganized subdivisions selling for $1.50–$2 per square meter and organized subdivisions priced at $3–$6 per square meter.

Parcels available for industrial development here are valued presently from $3–$6 per square meter, the difference in price being a reflection of the accessibility of water and the general location of the parcel. Available parcels range from .5 to 10 hectares. Commercial property varies in value according to the frontage of the parcel on the main road (i.e. from $6 to $30 per square meter). In Tamuning, available parcels range from 800 to 3,000 square meters. Little commercial activity is evidenced in Dededo because of the low traffic density.

(*c*) *Other areas.*—In other areas, values again depend chiefly upon location, accessibility, and available utilities and services. In general, values have increased 18–20 percent over the past 10 years in Dededo, Agana, Sinajana, Yona, Agana Heights, and Tamuning. Sinajana values, for example, are $0.90–$2 per square meter for residential parcels and $3–$5 for commercial lots. Commercial lots in Asan and Piti may have inferior locational characteristics. Lot depths may be too shallow, they may be backed by cliffs, or they may be susceptible to wave and inundation damage during high seas. Nonetheless, parcels in Asan-Piti are valued at $3–$6 per square meter in the more dense areas. Other than in the areas described, real estate activity in residential, commercial, or industrial categories has been relatively stagnant over the past 10 years.

2. GENERAL PRIVATE LAND PROBLEMS

In addition to problems related to the availability of private land, characteristics of size and location, the trends in land values and lot fragmentation, a number of land problems are common to residential, commercial, or industrial land in Guam. These problems include property identification, appraisal, assessment and taxation; zoning, subdivision and homesteading; and the effect these problems have upon land planning in Guam.

Problems of land identification are closely bound to the longstanding difficulties of establishing land titles under the limitations of inadequate land surveys thus far available in Guam. The difficulties and status of land surveys were described earlier. The need for an accurate triangulation net into which private land surveys may be tied is obvious. The extent to which the government of Guam will assume responsibility to correct or conduct surveys of private lands is not clear. Robert K. Coote [10] suggested that the government of Guam execute surveys in areas of private lands only to the degree necessary to provide a basis from which private surveyors could extend surveys to privately owned tracts. It seems evident that some provision must be made to bridge current surveys in areas remote to the established secondary nets when no indication that intervening private surveys are likely to be made. Repeated affirmation of the critical need for accurate land descriptions leading to insurable and marketable titles has been stressed since 1950.

An acceptable survey of a parcel of private land is part of the action required to obtain a certificate of title in Guam. The certificate is the instrument which now conveys land ownership and is presently the only document upon which title insurance can be drawn that is acceptable to local banks for mortgage loans. Land by which ownership is so evidenced is termed "registered land," and all other land is unregistered land. About 85 percent of Agana is now registered, but the percentage drops very sharply in outlying areas. A certificate of title is obtained by a court action and has the effect of negating further litigation by other claimants. The party wishing to obtain the certificate files an action in Guam district court which, after publishing public notice, hears any other claims and rules on the issuance of the certificate. Property deeds which date back before World War II are not considered acceptable as proof of ownership. Since there are about 12,000 land entries for the island of Guam, the magnitude of the survey and title proof problem will have a significant effect upon the future economic development of the island.

Land identification and titleship proof are also integral with the problems of private property appraisal, assessment and taxation. Experienced and sound appraisals are essential for the purchase, exchange, sale or other transaction of government and private lands. Assessment rolls are being revised upon the basis of new appraisals with the objective of updating and revising the roll by June 1966. In addition to the revision and correction of the rolls, the rolls themselves are being converted from a manually-maintained record to one punched on Addressograph plates. The new system should make possible savings in time and labor required to produce the annual tax roll, the preparation of tax bills, and the tabulation of useful analyses of property ownership.

Zoning control of residential, commercial, or industrial development in Guam has generally been nonexistent. Although a zoning law has been in effect since 1952 and a new law is under review, little has been done to develop comprehensive zoning as a basis of community planning, and zoning activities have been limited to specific zoning exceptions or variants. Zoning in Guam takes effect upon the filing, for each municipality, of a zoning map. Upon adoption, the map becomes the guide for that community. Thus far, zoning maps have been filed only for Agana, Tamuning and Tumon. Consequently, rapidly growing communities such as Barrigada are developing without zoning control. In addition, the lack of a comprehensive zoning approach for the island communities as a whole results in spot zoning exceptions and a dilution of any benefit which zoning could provide to the orderly development of residential, commercial, or industrial areas.

Under titles 18 and 19, control over subdivision rests with the Department of Land Management. A serious shortage of housing in Guam has been reaffirmed repeatedly by public officials and private community leaders. Despite the subdivision activity noted in a preceding section, there is no evidence that private enterprise will be able to supply the potential demand for housing. Coote notes that of some 107 subdivision maps filed between 1952 and 1962, probably less than 10 represented actual subdivisions. The rest were for the purpose of dividing

[10] Office of the Assistant Secretary, Public Land Management, Department of the Interior.

parcels in two. He points out that there has been little demand for residential properties in the medium-to-high price categories, but that there have been few residential properties offered at a price which would permit construction in the $8,000 to $10,000 range. Generally, the problem of subdivision on Guam is deeply involved with the problems of private land ownership and public land titles. It is unlikely that any significant advance will be made on the problem of subdivision development and control until those other difficulties are resolved.

H. Land Planning

A master plan for the Territory of Guam is the responsibility of the Department of Land Management. The Department has had a program directed toward fulfilling the requirements for a master plan which were to include a "land use plan, public buildings, community design, housing, and any other plans and reports as may be made on the basis of the physical and economic land development of Guam." [11] Much of the work accomplished by the department was negated by the destruction of Typhoon Karen, but considerable progress was made in delimiting current land use on Guam and in studies relating to community facilities, water supply and land ownership. A master plan for Guam has recently been published by the Department of Land Management. The most important aspect of the department's work has been the development of tertiary traverses based upon U.S. Coast and Geodetic Survey nets. The traverses will be of considerable value in establishing valid points for private and public property parcel surveys in the future.

Nevertheless, it is evident that much of the department's work has been limited to "brush fire operations." The requirements for spot planning for areas in which the government of Guam has immediate interest, requests for specific zoning exceptions in those areas which had zoning regulations, and other current problems have diluted the effort that the Land Management staff could devote to land planning.

Future success in planning activities in the government of Guam will depend upon a sound basis of information. It seems clear, therefore, that a continuing effort should be made to develop land use and ownership studies on as current a basis as possible, to complete comprehensive zoning, and to develop an island-wide road plan.

[11] "Role of Territorial Planning Commission in Planning," Basel E. Crowe, Director of Land Management.

APPENDIX 3—FREIGHT TRANSPORTATION

Critical to the import and export components of the Guamanian economy are the availability and cost of transpacific freight transportation. The island is now heavily dependent upon imports, and its limited resources indicate a continuing need for a high-import level. Furthermore, the economic development of Guam, which is contingent upon the successful establishment of export industries, is especially sensitive to the conditions of cargo shipment. Guam's competitive position as an exporter, relative to other Far Eastern and oceanic areas, will be particularly affected by the cost of freight movement.

Ocean shipping is by far the more important mode of freight transportation. Only two-tenths of 1 percent of cargo loaded and unloaded on Guam in 1964 was transported by air. Since few export industries will use this means of conveyance, it is unlikely that the relative importance of air freight will increase substantially in the future. The emphasis in this appendix, therefore, is placed on the facilities and costs of ocean shipping. Because the United States is the major source of imports to Guam and will be the primary market for its exports, the nature of the Guam-United States route is of greatest interest. The routes linking Guam with other Pacific countries are open to foreign shipping lines, thus assuring competitive rates.

A. Ocean Transportation

Although Guam is over 5,000 nautical miles from the U.S. mainland, trade between these points is considered "domestic." This designation has caused two problems. First, as a domestic port Guam is subject to coastwise shipping laws that prohibit the use of foreign-flag vessels for transporting cargo between the United States and Guam, although other routes have been open to foreign shipping since 1962. Second, U.S.-flag carriers on this route are not eligible for subsidies. These two issues are reflected in freight tariffs for Guam that are significantly higher than those on routes between the United States and other Pacific countries. The difference in costs is further aggravated by the imbalance in the directional flow of goods. During the 1964 fiscal year, 118,971 revenue tons were shipped from the United States to Guam, while only 14,972 were backhauled.[1] Until more inbound tonnage can be generated, there is little possibility of improving the quality or cost of service.

1. Character of Guam Shipments

The distribution of the 247,000 revenue tons handled by the commercial port of Guam during fiscal year 64 is given in table 1. The United States and Japan together account for nearly 80 percent of total import tonnage but for almost 90 percent of imports by value, as indicated in table 2. The leading commodities imported from the United States were machinery and vehicles and foodstuffs (animal and vegetables), as indicated by the broad totals of table 2 and in some commodity detail in table 3. Quantities listed for export in table 1 and elsewhere in this report properly should be called "reexports," since all but 2.8 million pounds of scrap metal and military surplus equipment represented the reexport of imported goods or the return of military and civilian personal effects (another 3.6 million pounds). Thus, in fiscal 1964 as in prior years, Guam had almost no "commercial" exports. Since 1959 there has been a substantial increase in the dollar value of Guam's total imports (without adjustment for price changes) and some increase in the percentage of imports received from foreign countries (table 2). The actual imbalance in Guam's merchandise trade with all areas outside Guam, therefore, is considerably more pronounced than the tonnage data indicate since the trade is virtually all one way, and that one-way traffic is increasing.

[1] Commercial Port of Guam, Annual Report to the Governor, Fiscal Year 1964.

TABLE 1.—*Imports, exports, and transshipments in revenue tons by country, fiscal year 1964*

Country	Imports	Exports	Country/Country transshipment	
United States	118,791	14,792	United States/Trust territory	20,446
Japan	22,207	726	Philippines/Trust territory	1,336
Trust territories	4,239	21,024	Other	1,010
Philippine Islands	5,064	6,897		
Australia	6,008	42	Total	22,792
Formosa	6,672	12		
Hong Kong	3,989	2		
New Zealand	1,596	2		
Other	9,784	2,125		
Total	178,440	45,622		

Source: Commercial Port of Guam, Annual Report to the Governor, Fiscal Year 1964.

TABLE 2.—*Guam trade*

[In thousands of dollars]

	1964	1963	1962	1959
U.S. shipments to Guam	39,987.9	33,074.5	20,979.0	25,936.6
Animals and animal products, edible	3,252.0	2,947.9	2,366.6	2,108.8
Animals and animal products, inedible	214.5	144.8	103.3	185.0
Vegetable food products and beverages	6,503.3	5,792.4	3,128.7	3,142.1
Vegetable products, inedible except fibers and wood	1,182.2	916.5	725.3	833.4
Textile fibers and manufactures	790.6	628.1	466.1	664.6
Wood and paper	2,402.4	2,081.2	1,421.8	2,648.3
Nonmetallic minerals	2,618.4	1,565.6	676.7	1,672.0
Metals and manufactures, except machinery and vehicles	6,432.1	4,196.4	4,485.8	3,414.1
Machinery and vehicles	11,741.8	11,893.4	4,533.9	5,967.4
Chemicals and related products	1,771.8	1,569.8	1,057.0	1,071.1
Miscellaneous	3,074.4	2,798.4	1,020.8	2,215.8
Guam imports from foreign countries [1]	9,200.6	8,483.6	5,600.5	4,108.1
Japan	[2] 4,255.4	3,819.2	2,186.3	1,201.7
Australia-New Zealand	[2] 2,143.8	2,463.2	1,781.3	636.4
All other	[2] 2,801.4	2,201.2	1,632.9	2,270.0
Total (U.S. shipments plus foreign imports)	49,188.5	41,558.1	26,579.5	28,694.1
Reported Guam total [3]	41,365.1	36,294.6	25,541.9	30,354.4

[1] Average of fiscal year totals in Governor of Guam's annual reports to the Secretary of the Interior (except with respect to 1964).

[2] One-half of fiscal year 1964 Annual Report of the Governor of Guam to the Secretary of the Interior, plus separate Guam report July-December 1964.

Source: U.S. Bureau of the Census, FT-800 reports (except where otherwise specified).

TABLE 3.—*Shipments from the United States to Guam, 1964*

Schedule Q No.	Schedule Q commodity description	Unit of quantity	Net quantity	Value (dollars)
	Total shipments			39,987,903
0012	Baby chicks	Number	25,400	8,636
0014	Animals, edible, not elsewhere classified			1,660
0015	Beef and veal, except canned	Pound	99,000	194,711
0018	Pork, fresh or frozen, except canned	do	1,300,540	448,378
0020	Hams and shoulders, cured or cooked	do	140,900	52,900
0024	Pork, not elsewhere classified, except canned	do	111,000	45,875
0025	Sausage, bologna, etc., except canned	do	547,210	222,809
0028	Pork, canned, not elsewhere classified	do	479,112	202,829
0035	Sausage, bologna, etc., canned	do	140,543	90,137
0036	Chicken, fresh or frozen	do	1,406,655	477,960
0039	Meat and meat products, not elsewhere classified	do	518,670	146,578
0042	Lard, including rendered pork fat	do	34,224	4,270
0044	Milk and cream, evaporated, unsweetened	do	2,437,080	307,250
0046	Milk, dried, whole, including cream	do	5,600	1,731
0048	Nonfat dry milk solids	do	1,024,842	183,929
0050	Butter	do	45,500	23,229
0055	Cheese	do	80,940	40,660

TABLE 3.—*Shipments from the United States to Guam, 1964*—Continued

Schedule Q No.	Schedule Q commodity description	Unit of quantity	Net quantity	Value (dollars)
0060	Dairy products, not elsewhere classified			401,487
0080	Fish and fish products	Pound	460,508	206,460
0085	Eggs in the shell	Dozen	86,280	25,472
0090	Animal products, edible, not elsewhere classified			42,643
	Group 00 total			3,296,984
0310	Leather			
0610	Boots and shoes, leather, men's	Pair	14,380	2,732
0620	Boots and shoes, leather, boys'	do	1,379	85,454
0625	Shoes leather, women's, misses'	do	6,325	4,480
0635	Shoes, leather, children's	Pair	10,344	22,125
0640	Boots and shoes, not elsewhere classified	do		20,841
0645	Luggage and related articles	Number	4,023	6,491
0650	Leather manufactures not elsewhere classified			3,574
0810	Animal fish oil, grease, inedible	Pound	11,200	16,202
0910	Live animals not elsewhere classified			1,539
0950	Animal products, inedible, not elsewhere classified			30,607
	Group 0 total			14,433
1005	Corn including seed, except sweet corn seed	Bushel	6,084	214,538
1010	Milled rice	Pound	30,021,620	16,210
1015	Wheat flour	Hundredweight	38,641	2,878,403
1020	Bakery products	Pound	192,453	213,821
1060	Grains and preparations not elsewhere classified			73,173
1110	Dairy and poultry feeds, mixed	Short ton	4,166	80,410
1190	Feeds not elsewhere classified	do	619	350,509
1210	Beans, dry, ripe, except seed	Pound	36,475	47,872
1215	Potatoes, white, fresh	do	609,950	4,458
1230	Vegetables, fresh, not elsewhere classified	do	1,147,729	31,151
1240	Soups can except baby food soups	do	411,610	78,306
1246	Catsup, chili sauce, etc	do	100,623	86,453
1250	Tomato juice, canned	do	50,109	13,905
1271	Vegetables and juices not elsewhere classified canned	do	1,006,514	4,540
1290	Vegetables and preparation not elsewhere classified			168,913
1310	Fruits, fresh			146,942
1330	Fruits, canned	do	996,803	138,819
1350	Fruit juices, concentrated incl pkd	do	462,880	77,853
1360	Fruits and preparations, not elsewhere classified	Gallon	58,788	80,679
1370	Nuts and preparations			43,857
1410	Oleomargarine, vegetable or animal	Pound	113,346	60,124
1425	Vegetable oil shortening	do	7,515	1,585
1460	Vegetable oils and fats, refined, not elsewhere classified	do	348,813	75,602
1510	Cocoa, coffee, tea, and substitutes	do	495,775	95,256
1530	Spices	do	206,577	230,302
1610	Chocolate candy	do	15,314	12,196
1615	Candy except chocolate	do	214,836	102,580
1630	Chewing gum	do	139,589	68,707
1650	Industrial molasses	Gallon	104,120	76,563
1690	Sugar and related products not elsewhere classified		376	131
1710	Malt liquors	Gallon	762,688	166,619
1760	Beverages not elsewhere classified			782,422
	Group 1 total			265,279
2040	Rubber footwear	Pair	8,317	6,502,240
2045	Tires and casings, truck and bus	Number	2,846	28,605
2065	Tires and casings, passenger car	do	12,741	153,759
2066	Casings, off road, except farm tractor	do	144	105,467
2067	Casings, farm tractor, etc	do	183	26,625
2068	Tires and casings not elsewhere classified	do	694	10,272
2070	Automotive tire repair materials	lb	33	4,455
2080	Inner tubes, not elsewhere classified	Pound	12,868	6,903
2085	Tire sundries and repair materials	do	82,453	19,736
2092	Rubber and fabric belts and belting	do	8,305	27,960
2110	Natural and synthetic rubber and crude includes, not elsewhere classified			7,819
2210	Natural stone, gums, and resins	do		110,654
2220	Crude drugs, herbs, etc	do		
2230	Cutch	do		
2240	Vegetable oils and fats, crude	do	16	2,510
2250	Seeds, except oilseeds	do		36
		do	6,107	433
		do	4,840	3,172
				3,202

TABLE 3.—*Shipments from the United States to Guam, 1964*—Continued

Schedule Q No.	Schedule Q commodity description	Unit of quantity	Net quantity	Value (dollars)
2800	Nursery and floral stock			100
2810	Cigarettes	Thousand	121,248	579,174
2890	Tobacco and manufactures, not elsewhere classified.			28,146
2900	Vegetable products inedible, not elsewhere classified.			611
	Group 2 total			1,182,152
3030	Cotton, semimanufactures, not elsewhere classified.	Pound	65,922	14,495
3035	Cotton sewing thread	do	4,378	9,048
3045	Cotton cloth duck and tire fabric, unbleached			3,101
3052	Drill twill and satin finished	Square yard	3,210	1,775
3057	Cotton sheeting, finished except yarn dyed	do	13,900	4,010
3065	Cotton cardigan broadcloth, except yarn dyed	do	9,311	3,647
3070	Cotton print cloth finished except yarn dyed	do	81,841	25,602
3075	Cotton yarn dyed fabrics not elsewhere classified.			3,544
3080	Cotton duck and awning material, except yarn dyed.	Square yard	800	407
3085	Cotton organdie batiste, lawn voile finish	do	2,030	733
3102	Cotton fabrics not elsewhere classified			31,352
3105	Cotton handkerchiefs	Pound	708	3,205
3110	Cotton hosiery	Dozen pair	744	2,659
3115	Cotton knit underwear and nightwear	Pound	5,773	16,247
3120	Cotton knit wearing apparel not elsewhere classified.	do	15,932	46,863
3127	Cotton woven work clothing, men's not elsewhere classified.	do	17,159	36,958
3130	Cotton woven shirts except work shirt	do	7,691	37,481
3135	Cotton dress and ensembles, woven fabrics	do	1,188	3,295
3160	Cotton wearing apparel not elsewhere classified.	do	33,013	85,198
3165	Cotton laces, embroideries and articles of, not elsewhere classified.	do	765	1,408
3170	Cotton narrow fabrics, not elsewere classified	do	1,013	1,818
3175	Cotton blankets	do	3,452	4,248
3180	Cotton bedspreads	do	1,327	1,622
3185	Cotton sheets and pillow cases	do	11,367	16,590
3190	Cotton house furnishings, not elsewhere classified.	do	33,272	38,143
3192	Cotton bags, new and used	do	68	177
3199	Cotton manufactures, not elsewhere classified	do	11,060	13,726
3210	Jute bags, new or used	do	10,300	3,647
3215	Flax linen fabrics, wide and narrow	do	173	1,190
3400	Vegetable fibers and manufacturers not elsewhere classified.			10,771
3610	Wool unmanufactured	100 pounds	96	196
3615	Wool yarns	Pound	74	193
3625	Wool, semimanufactures, not elsewhere classified.	do	1,000	200
3630	Wool wearing apparel, not elsewhere classified			3,317
3660	Wool manufactures, not elsewhere classified			22,300
3690	Hair and manufactures, not elsewhere classified.	Pound	4,000	1,250
3835	Woven filled yarn fabric, printed rayon acetate	Square yard	563	274
3840	Woven filled yarn fabric, not elsewhere classified, rayon acetate	do	3,570	1,473
3845	Wovenspun yarn fabric printed rayon acetate	do	73	100
3850	Woven spun yarn fabric not elsewhere classified, rayon acetate	do	3,963	1,883
3860	Remnants mill ends, covered synthetic	Pound	3,067	1,113
3865	House furnishings, synthetic fabrics	do	9,500	19,935
3866	Dresses, ensembles, woven synthetic fabrics	do	1,675	10,479
3868	Underwear, not elsewhere classified, synthetic woven.	do	3,300	19,400
3870	Nylon hosiery, women and children	Dozen pair	2,259	10,941
3875	Synthetic socks, mens	do	2,800	15,579
3876	Synthetic knit underwear and nightwear	Pound	3,251	10,967
3879	Synthetic underwear and nightwear	do	1,470	4,525
3885	Synthetic fibers and manufacture, not elsewhere classified			82,219
3910	Felt base floor covering	Square yard	7,500	8,103
3920	Corsets, brassieres and girdles, except rubber	Dozen	743	13,544
3930	Neckties, scarfs, mufflers, scarfs, etc	Pound	1,578	9,431
3940	Mattresses, cotton, kapok, etc	Number	2,851	68,406
3950	Gauze and bandage, sterilized	Pound	20,248	42,659
3960	Textile manufactures, not elsewhere classified			15,307
	Group 3 total			700,554

TABLE 3.—*Shipments from the United States to Guam, 1964*—Continued

Schedule Q No.	Schedule Q commodity description	Unit of quantity	Net quantity	Value (dollars)
4010	Wood, unmanufactured			
4015	Lumber, Douglas-fir, resawed 2 inch and under.	Thousand board feet	1,271	81,372
4030	Lumber, Douglas-fir, worked, patterned	do		192,147
4070	Lumber, softwood, not elsewhere classified	do	36	6,786
4090	Hardwood lumber, flooring, not elsewhere classified.	do	3,906	402,225
4190	Wood containers, shooks, except cooperage	do	221	24,134
4220	Cooperage and stock			
4240	Plywood			11,723
4260	Millwork	Square foot	3,428,880	1,500
4273	Furniture wood or upholstery and wood			381,256
4290	Wood manufactures, not elsewhere classified			241,995
4390	Cork and manufactures			210,120
4705	Paper, standard newsprint	Pound	3,990	48,033
4710	Paper, book, printing, and converting	do	380,281	4,112
4715	Paper, writing	do	81,317	32,876
4720	Paper, wrapping, kraft	do	82,010	15,713
4725	Paper, wrapping, not elsewhere classified	do	37,345	35,046
4740	Paper, except building paper, not elsewhere classified.	do	36,160	10,093
4750	Paperboards, except wet machine	do	112,939	10,448
4755	Building paper and board	do	24,927	29,994
4760	Envelopes, all types material	do	303,230	8,165
4765	Office supplies, paper, not elsewhere classified	do	5,028	45,916
4770	Stationery, tablets, etc	do	20,288	2,650
4780	Bags and sacks, paper	do	120,757	10,897
4790	Containers, paper, not elsewhere classified, except sanitary food.	do	578,328	39,627
4800	Sanitary-food containers and products	do	105,328	107,617
4805	Toilet paper, except stock	do	525,418	16,976
4820	Sanitary and health products paper, not elsewhere classified.	do	257,287	135,814
4890	Paperboard and products, not elsewhere classified.	do	186,723	43,024
	Group 4 total			35,564
5010	Coal and related fuels			108,589
5020	Kerosene, not elsewhere classified	Barrel	1,145	2,602,434
5030	Oil, lubricating, red and pale	do	155	7,263
5035	Oil, lubricating, black	do	87	17,895
5045	Greases, lubricating, except graphite	Pound	59,102	3,281
5054	Petroleum asphalt and products	Long ton	2,038	1,816
5060	Auto engine and gear lubricating oil	Barrel	5,024	8,311
5065	Aviation motor fuel and lubricating oil, not elsewhere classified.	do	80	252,983
5090	Crude petroleum, natural gas, and petroleum products.			150,141
5100	Stone, hydraulic, cement, and lime			3,565
5210	Flat glass and products			54,481
5220	Glass pharmacy prop ware unfilled			1,344,991
5230	Glass bottles, beverage, unfilled			126,973
5280	Glass containers unfilled, not elsewhere classified.			2,709
5210	Glassware, table, kitchen, tumblers, not elsewhere classified	Dozen	16,456	28,337
5290	Glass and products, not elsewhere classified			839
5315	Clays, not elsewhere classified			32,203
5325	Pottery, table, etc	Long ton	1,140	114,258
5335	Pottery, sanitary fixtures, etc	Dozen	308	4,196
5340	Electrical porcelain			1,109
5345	Pottery, not elsewhere classified	Pound	89,348	73,649
5355	Refractories			30,513
5360	Tiles, earthen, floor, and wall			361
5400	Clay products, not elsewhere classified	Square foot	147,703	569
5410	Abrasives			69,792
5430	Abrasive products			4,232
5460	Asbestos and manufactures			1,091
5480	Gypsum, crude, crushed, calcined			12,982
5750	Salt	Long ton	24	71,351
5800	Nonmetallic minerals, not elsewhere classified.	Pound	201,944	1,180
	Group 5 total			12,043
6010	Cast iron pressure pipe			284,386
6015	Cast iron soil pipe	Pound	809,959	2,618,435
6025	Cast iron reinforcement bars	do	836,361	125,718
6030	All bars including bar shapes, not elsewhere classified.	do	8,413,739	91,165
		do	557,342	540,277
				44,307

TABLE 3.—*Shipments from the United States to Guam, 1964*—Continued

Schedule Q No.	Schedule Q commodity description	Unit of quantity	Net quantity	Value (dollars)
6035	Steel plates, not fabricated	Pound	92,111	9,289
6040	Steel sheets, black, ungalvanized	do	147,324	24,154
6045	Steel sheets, galvanized	do	1,063,790	144,491
6055	Structural shapes, not fabricated	Short ton	1,066	333,123
6060	Rails, trackwork, and track accessories			5,732
6067	Standard pipe, black, welded	Pound	352,153	47,969
6072	Standard pipe, galvanized, steel and wrought iron.	do	222,406	30,923
6075	Pipe tubes and tubing, not elsewhere classified	do	648,448	98,051
6080	Steel, galvanized wire	do	226,691	53,431
6085	Steel barbed wire	do	2,000	250
6090	Iron products and steel mill products, not elsewhere classified.	do		82,128
6095	Cast and forged railway car wheels	do	158,738	45,253
6100	Safety razors and blades			16,031
6105	Metal cutlery, not elsewhere classified			4,610
6110	Table flatware and hollow ware			6,647
6115	Steel kitchen utensils, st and spn	Pound	12,910	15,790
6120	Aluminum kitchen utensils, st and spn	do	15,858	19,483
6125	Tin kitchen utensils, st and spn	do	1,899	1,448
6130	Cooking and kitchen utensils, not elsewhere classified.	do	7,259	7,533
6135	Metal cans and pots, finished or unfinished	do	1,722	9,373
6140	Metal furniture and fixtures, not elsewhere classified.			197,373
6145	Cook and heat stoves except electric			15,245
6151	Adzes, axes, etc., and agricultural handtools	Dozen	60	1,346
6155	Files and rasps	do	42	295
6160	Hand hoes, rakes, and forks, not elsewhere c[illegible]ed.	do	852	5,987
6165	Metal tools not elsewhere classified	do		118,879
6170	Door locks and lock sets	do	1,023	40,208
6175	Hinges and butts, all metals	Dozen pairs	3,371	27,587
6180	Iron and steel bolts, nuts, etc	Pound	240,513	128,325
6190	Builders hardware not elsewhere classified, iron, steel.			98,134
6195	Hardware not elsewhere classified			144,625
6200	Bathtubs, sinks, and fixtures, iron and steel	Number	1,383	61,168
6205	Plumbing fixtures and fittings not elsewhere classified.			85,408
6210	Cast iron pressure pipe fittings	Pound	628,616	75,186
6215	Cast iron soil pipe fittings	do	288,517	51,348
6220	Storage tank, lined or unlined	do	59,944	23,160
6225	Fabricated steel product not elsewhere classified.	do		1,159,329
6230	Iron and steel sash and frames	do	19,789	9,928
6235	Aluminum sash and frames	do	559,887	744,443
6245	Electric welding rod and wire, iron and steel	do	63,848	23,332
6250	Wire fencing and netting	do	114,321	24,657
6255	Iron and steel wire rope and cord	do	168,273	31,651
6260	Metal manufactures, not elsewhere classified			1,350,185
6270	Aluminum plates, sheets, and strips	Pound	138,793	52,340
6275	Aluminum castings and forgings	do	2,468	1,812
6280	Aluminum ores, semifabricated forms, etc			52,756
6283	Copper wire and cable, bare	Pound	259,295	119,319
6285	Copper ores, semifabricated form not elsewhere classified.			62,474
6290	Copper base alloys, scrap, etc	Pound	3,108	2,192
6300	Lead ores, semifabricated forms, etc			28,579
6305	Nickel ores, semifabricated forms, etc			140
6315	Zinc ores, semifabricated forms, etc			18
6320	Nonferrous ores, semifabricated forms			1,601
6330	Precious metal and plated ware, not elsewhere classified.			4,484
	Group 6 total			6,432,460
7010	Generator sets not elsewhere classified	Number	102	48,492
7015	Generators and parts not elsewhere classified			133,880
7020	Welding sets	Number	12	13,342
7025	Storage batteries, 6 and 12 volts	do	9,229	91,059
7045	Batteries not elsewhere classified			50,872
7040	Power transformers 0V 500 KVA	Number	24	165,568
7045	Power transformers not 0V 500 KVA	do	331	134,514
7055	Transformer and convertible apparatus, not elsewhere classified.			330,374
7061	Switchboard panels apparatus 0V 1,750V			280,152
7066	Switchboard panels apparatus 750VAUN			12,408
7070	Power switch circuit breakers			235,586
7085	Transformer and distributor switch charger, not elsewhere classified.			175,697

TABLE 3.—*Shipments from the United States to Guam, 1964*—Continued

Schedule Q No.	Schedule Q commodity description	Unit of quantity	Net quantity	Value (dollars)
7087	Watt heater and other integrating meters	Number	1,617	19,281
7090	Motors, electric, 1 to 200 hp	do	74	18,483
7095	Motors electric, over 200 hp	do	1	4,000
7100	Industrial motor controls			5,343
7110	Motors, controls, and parts not elsewhere classified			12,829
7115	Electric household refrigerator freezer	Number	2,327	134,450
7120	Household refrigerator systems and parts not elsewhere classified			3,795
7125	Electric lamps OV 3 volt 4 inch base	Number	75,756	18,476
7135	Electric household laundry equipment			107,560
7140	Electric flatirons	Number	314	1,906
7145	Electric household cook range 02 1 volt 2 kilowatts	do	614	72,763
7150	Electric complete cook food service equipment			56,706
7155	X-ray apparatus	Number	646	1,875
7165	Radio and TV receiving set home type			84,625
7170	Electronic equipment and parts not elsewhere classified			311,077
7180	Telegraph apparatus and parts			291,495
7185	Telephone apparatus			605,077
7190	Electric conduit, iron or steel	Pounds	203,722	72,435
7195	Electric conduit and fittings, not elsewhere classified			248,088
7200	Interior wiring devices not elsewhere classified			53,451
7210	Electric light fixtures and parts			328,001
7215	Electric building wire and cable	Pound	423,150	205,602
7220	Electric insulated wire, not elsewhere classified	do	1,093,092	508,863
7240	Electric machine and apparatus, not elsewhere classified			467,988
7250	Power boilers, water tube			650
7255	Power boiler parts not elsewhere classified			67,655
7265	Steam engine and turbines, not elsewhere classified			4,693
7275	Power generating machines			85,369
7280	Cranes, crawlers CAP NOV 21V2 yard	Number	1	37,180
7285	Concrete mixers and pavers			28,336
7295	Construction and maintenance equipment, not elsewhere classified			277,662
7300	Industrial trucks, fully powered	Number	18	71,546
7310	Mat hand equipment and parts, not elsewhere classified			241,296
7330	Mining and quarry machines and parts			1,312
7340	Petroleum field and refining equipment and parts			33,621
7345	Pumps centrifugal	Number	47	15,459
7390	Pumping equipment not elsewhere classified			50,559
7410	Lathes excluding vertical turret	Number	4	4,895
7460	Gas welding machine and parts			12,265
7490	Metal work machines and parts not elsewhere classified			79,326
7560	Sewing machines domestic	Number	54	5,939
7595	Dairy equipment and parts, commercial, not elsewhere classified			9,244
7615	Cannery machine and parts, not elsewhere classified			1,500
7620	Bottling machine and parts			4,119
7640	Food process machines and parts, not elsewhere classified			31,491
7650	Woodworking machines			27,047
7655	Comp and cond unit 1V5 NOV thp	Number	34	2,134
7660	Comp and cond unit OV1 NOV 3hp	do	43	5,028
7670	Self-contained commercial mechanical refrigerator unit	do	244	86,689
7675	Mechanical commercial refrigerators not elsewhere classified	do	56	29,070
7685	Air-conditioned refrigerator equipment not elsewhere classified			675,542
7690	Ball bearings and parts except balls			4,790
7695	Roller bearings and parts except roller			1,200
7712	Compressors	Number	40	50,813
7730	Indicators, instruments, etc., not elsewhere classified			110,891
7735	Water meters and parts			35,835
7745	Pipe valves, except automatic IAS	Number	12,067	239,878
7750	Pipe valves, except automatic nonferrous	do	4,083	55,387
7755	Automatic control valves not elsewhere classified	do	414	41,538
7760	Glassmaking machinery and parts			435
7785	Industrial machinery and parts not elsewhere classified			319,774

TABLE 3.—*Shipments from the United States to Guam, 1964*—Continued

Schedule Q No.	Schedule Q commodity description	Unit of quantity	Net quantity	Value (dollars)
7795	Accounting machines, etc			91, 210
7800	Typewriters standard new except electric	Number	348	44, 043
7805	Cash registers new and used	do	42	18, 077
7810	Appliances and parts, office not elsewhere classified			63, 240
7820	Printing and bookbinding machines			
7830	Sprayers and dusters	Number		8, 988
7835	Plows and listers	do	311	2, 648
7845	Cultivating implements not elsewhere classified	do	3	5, 655
7885	Agricultural machinery, etc, not elsewhere classified, and parts	do	13	1, 813
7873	Tractor, Trak, 50UN100DBHP, new			71, 070
7880	Tractor, wheel type, except garden	Number	2	46, 890
7890	Tractors, not elsewhere classified and parts	do	22	64, 337
7905	Trucks, gas, 6000 GVW and under commercial			152, 193
7908	Trucks, gas, 6,001 to 10,000 GVW commercial	Number	98	207, 510
7911	Trucks, gas, 10,001 to 16,000 GVW commercial	do	16	32, 016
7915	Trucks, gas, over 16,000 GVW commercial	do	15	74, 194
7919	Trucks, diesel, commercial, new	do	10	45, 779
7922	Buses, gasoline, commercial	do	5	109, 034
7925	Trucks, buses, chassis, used commercial	do	6	47, 620
7930	Passenger cars, chassis, new, nonmilitary	do	45	197, 820
7935	Passenger cars, chassis, used, nonmilitary	do	638	1, 463, 421
7940	Auto replacement parts	do	27	71, 557
7955	Trailers, except military not elsewhere classified	Number	27	430, 353
7965	Auto parts, equipment, etc, not elsewhere classified			1, 000
7975	Aircraft parts and accessories			201, 253
7985	Cycles and parts			142, 292
7995	Vehicles and parts not elsewhere classified			14, 524
				44, 533
	Group 7 total			11, 741, 839
8090	Coal tar products			5, 200
8110	Vitamins and vitasterols, etc			19, 307
8123	Vaccinating serums, antitoxin, human use			8, 556
8131	Culture media, enzymes and fruunt	Pound	30	272
8150	Sulfonamide drugs	do	25	154
8155	Penicillin	Million units	56, 113	4, 080
8165	Antibiotics not elsewhere classified			18, 694
8170	Medicinal and pharmaceutical preparations not elsewhere classified			122, 700
8210	DDT and for contents 20 percent AOV DDT	100 pounds	600	4, 5
8221	Insecticides, agricultural, not elsewhere classified	Pound	49, 194	21, 211
8225	Insecticides, etc, household and industrial	do	72, 300	35, 650
8230	Disinfectants, etc, household and industrial	do	19, 064	7, 024
8245	Baking powder	do	10, 220	2, 932
8255	Plastics and resin materials	do	82, 936	26, 140
8265	Organic surface active agents	do	800, 762	253, 803
8270	Special cleaning and washing compounds except soap	do	421, 012	42, 368
8275	Flavors and extracts natural	do	93, 120	14, 530
8280	Flavors and flavor extracts, synthetic	do	36, 775	22, 819
8285	Animal charcoal, cartons, etc	do	500	180
8290	Chemical specialties not elsewhere classified			167, 383
8310	Glycerine, crude and refined	100 pounds	3, 200	941
8340	Aluminum sulfate	Pound	20, 000	662
8345	Calcium hypochlorite	do	8, 000	1, 874
8350	Calcium carbide	do	60, 000	3, 000
8360	Chlorine gas	do	19, 500	3, 383
8380	Industrial chemicals, not elsewhere classified			82, 894
8420	Bituminous coat, liquid plastic			22, 800
8430	Emulsion paints	Gallon	3, 194	16, 255
8437	Lacquers, nitrocell, etc	do	9, 666	28, 07
8445	Thinners and retarders for lacquers	do	5, 811	16, 74
8450	Ready mixed paints, stains, enamels	do	112, 790	346, 124
8455	Ink, printing, and lithographic	Pound	1, 626	1, 97
8460	Pigments, paints, etc, not elsewhere classified			90, 791
8515	Nitrogenous fertilizer material not elsewhere classified			19, 775
8560	Fertilizer mixtures, prepared	Short ton	96	7, 385
8650	Explosive fuses and blasting caps			19, 139
8705	Soap, toilet, fancy, and medicated	Pound	104, 984	44, 367
8730	Dentrifices	do	26, 375	40, 786
8760	Soap and toilet preparations not elsewhere classified			272, 103
	Group 8 total			1, 771, 79

TABLE 3.—*Shipments from the United States to Guam, 1964*—Continued

Schedule Q No.	Schedule Q commodity description	Unit of quantity	Net quantity	Value (dollars)
9100	Photo and projection goods			281, 414
9130	Optical goods			12, 597
9140	Precious dental metal except silver alloys			526
9150	Surgical and medical instruments, apparatus			67, 732
9160	Surgical and medical apparatus			25, 023
9170	Dental and medical equipment, etc, not elsewhere classified			8, 149
9190	Scientific and professional instruments, appliances, etc, not elsewhere classified			47, 986
9290	Musical instruments, parts and accessories			79, 060
9390	Miscellaneous office supplies			69, 873
9430	Toys, athletic, and sporting goods			201, 824
9490	Ordnance and pyrotechnics			11, 780
9510	Textbooks, bound, school	Number	36, 402	59, 819
9560	Books and other printed matter, not elsewhere classified			127, 487
9620	Jewelry and related items			
9630	Closures bottle and container, except cork			50, 432
9710	Buttons			23, 507
9810	Matches			110
9850	Needles, sewing, not elsewhere classified	Thousand	36	4, 456
9875	Notions, cheap novelties, etc			353
9990	All articles not elsewhere classified			67, 417
	Group 9 total			1, 034, 924
				3, 074, 424

2. CURRENT SHIPPING FACILITIES

There are two U.S. flag carriers, one locally-owned shipping company, and six foreign-owned lines now serving Guam. Their other destinations are shown below:

Pacific Far East Line (U.S. owned)	U.S. West Coast, Kwajalein, Honolulu and Wake Island.
American President Line (U.S. owned)	U.S. east and west coasts, Kwajalein, Wake Island, Philippine Islands, and the Orient.
Pacific Micronesian Line (subsidiary of PFEL)	Japan and trust territory.
Pacific Navigation System, Inc. (locally owned)	U.S. west coast, Australia, Philippine Islands, Formosa, Saipan, the Orient, and Germany via Hong Kong.
Daiwa Navigation Co. (foreign owned)	Japan, Hong Kong, and Formosa.
Dominion Navigation Co. (foreign owned)	Australia, Formosa, Manila, and Japan via Hong Kong.
China Navigation Co. (foreign owned)	Hong Kong, Korea, the Orient, and France, England, and Denmark via Hong Kong.
Indo-China Steam Navigation Co. (foreign owned)	Thailand, New Zealand, New Guinea, Okinawa, and Japan.
Crusader Shipping Co. (foreign owned)	Canada, Argentina, Union of South Africa, and New Zeland.
Saipan Shipping Co. (foreign owned)	Saipan and other trust territory islands.

Pacific Far East Lines carried 42 percent of the cargo destined for Guam in 1964 and was also the most important conveyor of transshipments and exports. PFEL ships land at Guam every 2 weeks; the one-way trip between the U.S. west coast and Guam takes an average of 15 days. The other U.S.-flag line, the American President Line, provides the only direct link between Guam and the U.S. east coast. There is a landing every 3 weeks, but service is furnished only on the outbound portion of the route. Cargo loaded at Guam requires more than 2 months to reach the U.S. mainland. Since cargo for Guam is a small proportion of APL's operation (they transported only 21,000 tons in 1964), the company has experienced continual problems in stowing and unloading freight. Until substantially more U.S.-bound freight is generated, there is no reason for either line to increase its frequency of service, nor any incentive for APL to improve its service between Guam and the U.S. east coast.

Most of the foreign shipping lines do not have regularly scheduled visits to Guam. However, if more traffic can be generated either into or out of Guam, regular arrivals could begin. Since Guam is located near many of the major shipping routes of the Pacific, additional shipping lines could be attracted if they become necessary.

3. FREIGHT TARIFFS

Existing shipping schedules for Guam are adequate for the transportation of the current level of goods. As this level increases and, in particular, as exports develop, the routes and schedules can be altered. Better service should result from the anticipated increase in the flow of goods, but the major drawback to good freight transportation conditions—high cargo rates—will still persist.

Because of the limitations of the coastwise shipping laws, tariffs on the United States-Guam routes are established by only two parties, the Pacific Far East Line and the American President Lane. The rates (known as the Guam Trade Rate Agreement) cover tariffs between ports of the United States and ports in the Guam trade (Marianas Islands), Midway, Wake, and Eniwetok (Marshall Islands). The only control over them is exercised by the Federal Maritime Commission, which determines the fairness of the tariffs. Their justness is measured by the rate of return to the carrier, no more than 10-percent profit.

This method of setting rates presents a sharp contrast to that employed in the determination of tariffs on routes between U.S. ports and foreign ports. Such rates are the result of conference agreements. A conference is a voluntary association comprised of cargo carriers who enter into agreement for the purpose of establishing rates, fares, and practices pertaining to all members. Since foreign-flag shipping lines, with lower construction and operating costs than those of U.S. carriers, are members of these conferences, their competitive positions are important factors in the setting of tariffs. In order to allow U.S. shipping lines to compete on these routes, the U.S. Government provides operating and construction differential subsidies.

The rates between some Far Eastern ports, Guam, and the U.S. west coast are shown in table 4; in every instance the foreign port tariffs are lower, even though these ports are much farther from the U.S. mainland than Guam. The rates of the Military Sea Transportation Service (MSTS) are also provided (table 5) as possibly indicative of rates that could be established for Guam. (The MSTS rates apply to military cargo carried by API. and PFEL.) It should be noted that the U.S.-flag carriers recently applied for an 8.5-percent rate increase to become effective January 1966.

TABLE 4.—*Comparison of freight tariffs; selected commodities imported into the United States from Guam, the Philippines, Japan, and Hong Kong*

	Guam-Commercial [1]		Guam-MSTS [2]		Philippines [3]		Korea, Okinawa, and Japan [4]		Hong Kong [5]	
	Basis	Cost	Basis	Cost	Basis	Cost	Basis	Cost	Basis	Cost
General Cargo NOS (not hazardous or objectionable)	W/M	$78.25	(6)	$23.50	W/M	$62.25	(7)	{ [8] $35.50 52.75	W/M	$75.00
Coconut oil, barrels or drums	W/M	56.75	NS		W/M	33.25	NS		NS	
Containers, empty, returned, NOS	W/M	37.00	NS		W/M	35.00	(7)	23.00	M	27.50
Mats and matting, fiber	W/M	37.25	NS		(9)	23.75	(7)	24.25	M	26.25
Metal, scrap, general, in bulk	(10)	52.00	NS		L/T	31.25	NS		L/T	33.75
Shoes, rubber, canvas	M	58.25	NS		(9)	38.25	W/M	26.00	NS	
Minimum charge per bill of lading cargo NOS	Each	36.00	NS		Each	19.75	Each	18.25	W/M	17.25

[1] Source: Inbound rate sections of PFEL. Guam Freight Tariff No. 3; APL, Pacific/Guam Freight Tariff No. 6.
[2] Source: COMSTS.
[3] Source: Philippines-USA freight tariff No. 2, June 15, 1964, as amended.
[4] Source: Trans-Pacific Freight Conference of Japan, Freight Tariff No. 32, Nov. 1, 1961, as amended.
[5] Source: Trans-Pacific Freight Conference of Japan, Freight Tariff No. 20, Oct. 28, 1963, as amended.
[6] L/T or 40 cubic feet.
[7] S/T or 40 cubic feet.
[8] Lower rate applies where value of cargo does not exceed $500 per 40 cubic feet, f.o.b. Japan. High rate applies when value exceeds $500.
[9] 40 cubic feet.
[10] L/T or 55 cubic feet.

NOTE.—L/T—Long ton (2,240 lbs.); NS—not specified in applicable tariff; S/T—short ton (2,000 lbs.); W/M—standard rate basis of a long ton occupying 40 cubic feet. Weight or measurement is used, whichever produces the highest revenue. A 1-ton shipment occupying 80 cubic feet pays for 2 revenue tons.

TABLE 5.—*MSTS freight tariffs between Guam and the United States*

Commodity	Basis	Rate
General cargo, NOS	2,240 pounds or 40 cubic feet	$23.50
Special cargo (Government vehicles)	do	30.20
Privately owned vehicles	do	28.40
Refrigerated cargo	do	39.80

Source: MSTS, Port of Long Beach.

Currently, rates between the United States and Guam are the same in both directions. This is not the typical pattern for transpacific routes. Inbound routes are usually lower since U.S. exports have traditionally exceeded imports, resulting in a relative shortage of cargo on the inbound voyage. But as exports increase, there would be no apparent pressures on the U.S. carriers to lower rates under existing conditions. If, however, the larger quantity of commodities were sufficient to service this route, rates should fall.

The benefits of subsidies can be estimated from the amounts that are currently provided tothe types of ships used in Guam trade (see table 6). The subsidy for a C–2 type of cargo vessel is about $1,370 per day. An average trip from Guam to the United States (15 days) would therefore yield over $20,000. The difference between the existing tariff for general cargo shipped from Guam to the U.S. west coast on 3,000 tons of cargo (the average capacity of a C–2 carrier) and the tariff from the Philippines is $48,000. The subsidy is not sufficient to reduce the present cost to a competitive level, but if combined with quantity shipments of a few commodities, a more favorable rate structure could be obtained.

TABLE 6.—*Average subsidies paid by type of ship*

Type	Shipping company	Cost [1]
C–2	PFEL	$1,369 per day, based on 50,000 voyage-days in port and at sea.
C–3	APL	$1,520 per day, based on 35,000 voyage-days in port and at sea.
C–4 (old type)	APL	$2,100 per day, based on 12,000 voyage-days in port and at sea.
C–4 (new type being built)	APL	$1,800 per day (crew size reduced from old C–4 type).

[1] 85 percent is attributed to wage differences between the U.S. and foreign-flag ships.

Source: Mr. M. F. Parr, Federal Maritime Administration, Washington, D.C.

Several attempts have been made to exempt Guam from the coastwise shipping laws, and there is ample precedent for doing so. Trade with the Virgin Islands (an unincorporated territory of the United States as is Guam) is outside the coastwise restrictions and may be served by foreign carriers. American Samoa is also exempt. Alaska is permitted to receive goods by foreign-flag ships from other U.S. ports, although U.S.-flag ships are not subsidized in Alaskan trade. Proponents have argued that only by opening the Guam-United States route to foreign carriers and thus creating competition with U.S. ships could a reduction in shipping rates be effected. Subsidized U.S. carriers might then be able to serve Guam from their subsidized routes. The Maritime Administration and the Maritime Commission have contended that there is not sufficient evidence that foreign carriers would be interested in this route. Certainly this is a plausible argument based on the existing volume of trade. But in order to establish a viable economy on Guam, potential entrepreneurs must be assured that cost advantages they might realize by producing there will not be erased by high freight costs.

The problem of local transportation costs has many facets. Basically there are two components—insufficient volume of cargo, and the designation of Guam as a domestic port. The former should ease in the future with the development of export industries although, as pointed out above, their establishment will depend to a certain extent on the expectations for lower rates. The latter factor will require concerted effort by the government of Guam in order to effect a change.

B. Air Freight Transportation

Although air cargo is a very small proportion of total cargo shipped to and from Guam, it is important for the transportation of certain commodities. Approximately 531 tons were air freighted to Guam in 1964 and, as with ocean freight, a much smaller amount (less than 30 tons) was conveyed on the Pan American Airways passenger flights. Pan American, the only intercontinental airline with landing rights on Guam, has three flights per week each way, linking Guam with San Francisco, Honolulu, Manila, and Saigon. Twice-weekly flights of jet freighters from San Francisco to Saigon via Guam began in April 1965 and there are currently six landings per week, all westbound. However, this service was initiated in response to the military action in South Vietnam and has little import in the movement of civilian freight.

The major sources of air transported imports are the Philippines, Hong Kong, and the United States, in that order. Food, clothing, magazines and wood carvings are the primary imports from the Philippines; bolts of cloth, clothing, and jewelry comprise the bulk of cargo from Hong Kong. The most common imports from the United States are machine parts, auto parts, and television films.

Transpacific air cargo rates, like passenger rates, are relatively high. Furthermore, shipping costs between Guam and the United States are no lower than those on the longer routes that link the United States with other areas of the Pacific. General commodity rates are shown in table 7 for Guam, Tokyo, and Manila to San Francisco. Special commodity rates are available for items that move in sustained volume.[1] There are usually small differences in rates between outbound and inbound cargo.

Table 7.—*General commodity air cargo rates between Guam, Manila, and Tokyo and San Francisco*

Weight	Guam to San Francisco	Manila to San Francisco	Tokyo to San Francisco
Under 100 pounds	$2.19	$2.18	$2.14
100 to 220 pounds	1.58	1.62	1.58
220 to 440 pounds	1.47	1.47	1.43
440 to 660 pounds	1.34	1.34	1.29
660 to 880 pounds	1.34	1.18	1.13
880 to 1,100 pounds	1.34	1.09	1.04
Over 1,100 pounds	1.04	1.04	1.00

Source: Pan American Airways.

Similar problems exist for air cargo rates as for ocean shipping tariffs. The volume of cargo is small and has directional imbalance, and there is no foreign competition. It is unlikely that foreign carriers would operate on the Pan American routes, although other routes between Guam, Tokyo, Sydney, and Taiwan are being considered by foreign airlines. Increased exports will have the greatest effect on rates. An effort by the Civil Aeronautics Board to reduce Pacific fares might also encourage lower cargo rates.

C. Conclusions

1. Rates for Guam for both air freight and ocean shipping are high relative to those for routes that link the United States with other Pacific areas.
2. Both modes require an increase in cargo volume and, in particular, an increase in exports from Guam before rates can be substantially lowered.
3. The designation of Guam as a "domestic" port should be changed to "foreign" port. This would allow foreign competition and subsidization of U.S.-flag lines. Both are crucial for lower tariffs.
4. Increased frequency of service and additional routings must wait until a higher level of exports is generated.

[1] For example, a rate of 45 cents per pound was obtained for the shipment of heart of palm from Guam to the United States.

APPENDIX 4—LOCAL BUSINESS ENVIRONMENT

The information presented here concerns a variety of private and governmental activities relating to the general problem of conducting business on Guam. These include the availability and adequacy of professional and business services for which future economic enterprises would have need; external communications; public utilities and the commercial port; off-island communications; and housing and construction costs.

A. Construction Costs

Although more than 75 general contractors of various sizes are listed in the Guam Business Directory, the experience of a few of the larger companies indicates construction costs on Guam. This section includes cost multipliers based on material and labor costs which will suggest an approximate measure of Guam construction costs as compared with those in other geographical areas.

1. GUAM CONTRACTORS: REPRESENTATIVE COSTS

The experience of Black Construction Co.[1] on three different construction contracts is as follows:

(*a*) Water treatment plant (concrete building with hollow block walls):
Area: 1,720 square feet.
Building cost: $34 per square foot.
Site preparation: $2 per square foot.

(*b*) George Washington Senior High School (concrete building with hollow block walls):
Number of buildings: six one-story, four two-story.
Area: 107,260 square feet total.
Building cost: $20 per square foot.
Site preparation: $1 per square foot.
Utilities: $1 per square foot.

(*c*) Trade and technical school (Butler and concrete buildings):
Number of buildings: six steel Butler (50,400 square feet total—8,300 square feet each), four concrete (6,720 square feet total).
Area: 57,120 square feet total.
Building cost: $8 per square foot.
Site preparation: $1 per square foot.
Utilities: $1 per square foot.

In the third example, the Butler building cost would be approximately $6.40 per square foot, assuming a cost of $20 per square foot for the concrete building. By comparison, the construction cost for Butler buildings in the Los Angeles area is about $4.50 per square foot.

The Jones & Guerrero Construction Co. provided the following cost data based upon their experience in the construction of commercial structures, apartments, and low-cost homes.

(*a*) Commercial buildings, including apartments, stores, the Guamerica Motel, etc. Cost estimates, excluding site preparation, are about $18 per square foot. These estimates are based on experience in the construction of concrete buildings with hollow block walls for apartments, motels, and similar uses. Again by comparison, motel construction costs in Los Angeles are estimated at $15.50 per square foot.

(*b*) Butler building costs on Guam, excluding site preparation, are estimated by J. & G. to average $7 to $8 per square foot, but a larger scale building (such as a 20,000-square-foot building proposed for a tuna cannery might cost under $5 per square foot.)

(*c*) Private housing costs include reasonable site development and external utilities but exclude lot price. In general, construction costs are about $12 per

[1] Related by E. W. McCurdy.

foot, but specific costs for two increments of Jones & Guerrero's "Jonesville" development vary as shown (J. & G. offers FHA-approved 203–H housing of reinforced box-type construction with concrete floors and ceilings, block walls, and wood interiors):

(1) First 80-unit increment

	Area	Price [1]	Price per square foot	Lot cost
Bedrooms:				
2	1,000	$12,300	$12.30	$1,500
3	1,150	13,868	12.06	1,500

[1] Price excludes utilities. A substantial portion of the residents have invested additional amounts ($1,000 to $5,000) for carports, extra rooms, etc.

(2) Second 31-unit division

	Area	Price [1]	Price per square foot	Number sold
House type:				
44	1,232	$12,500	$10.15	1
45	1,344	13,500	10.04	1
46	1,456	14,200	9.75	29

[1] Price excludes utilities. A substantial portion of the residents have invested additional amounts ($1,000 to $5,000) for carports, extra rooms, etc.

Construction costs for the Kaiser Hawaii Kai Dededo development are as follows:

	Area	Price [1]	Price per square foot	Net construction costs
Bedrooms:				
3	860	$11,400	$12.65	$7,200
4	1,045	12,400	11.87	8,200

[1] Price includes $2,600 per house for lot preparation and external utilities (grading, roads, electricity drainage, water, etc.) and a $1,600 overhead allocation per house.

An alternative breakdown was provided also:

Bedrooms	Labor	Materials	Subcontracting		Equipment usage [1]	Forms
			Plumbing	Electrical		
3	$2,400–$2,500	$3,100–$3,200	$800	$325	$150	$125
4	2,600	3,800–3,900	880	350	150	125

[1] Depreciation of cranes, etc., plus direct operation.

Generally, Kaiser feels that labor costs are declining due to the accumulating skill and experience of local construction workers and that additional cost reductions should be possible by taking advantage of lower cost materials, such as reinforcing steel from Japan.

2. GUAM COST MULTIPLIERS

An approximate measure of construction costs on Guam as compared with other geographic areas is provided by construction cost indices or multipliers which were furnished by Navy and civilian sources. Cost construction indices for Guam and other area are given in Air Force Pamphlet No. 88–008–1, "Military Construction Pricing Guide," used by the Navy as an approximate guide to local construction costs. The indices are primarily designed to provide relative cost

measures of achieving similar construction objectives at different geographic locations, using Washington, D.C., as a datum of 1.0. The 1964 index for Guam was 2.0, and the 1965 index is 1.8. Indices for other areas range from 0.6 and 0.9 for Taiwan and Okinawa; 1.0 for Washington, D.C., Los Angeles and Manila; to 1.3, 1.4 and 1.6 for Honolulu, Honolulu vicinity, and other Hawaiian islands, respectively. Navy experience indicates that late 1965 construction costs on Guam are about 1.6 for average type buildings (including air conditioning) and 1.3 for cement and reinforced concrete work. The latter involve some of the Navy reconstruction programs and do not utilize high levels of talent or special materials and equipment.

However, construction indices should be used with the knowledge that conditions on Guam may vary significantly from those upon which the index was structured and weighted. To attempt to account for geographical differences in environmental requirements, labor characteristics and other cost elements, the Air Force index includes only standard type buildings and repetitive type construction (such as dormitories, dining halls, BOQ's, administrative buildings, fire stations, warehouses, etc.) which make maximum use of local skills, materials, and equipment. The more complex modes of construction are not represented in the index. Nevertheless, several factors that are unique to Guam (the scheduling, variety and volume of its construction projects) may influence the value of the index in estimating construction costs on the island. Construction tends to be one-of-a-kind, on a small scale, with relatively scattered sites.

A second measure is the construction cost multipliers for commercial construction developed by Marshall and Stevens Publication Co. for their "Residential Cost Handbook".[3] The 1965 multipliers for commercial construction for Los Angeles, Hawaii, and Guam are:

Location	Class D	Class C	Class B	Class A
Los Angeles	1.03	1.04	1.04	1.04
Hawaii	1.30	1.24	1.24	1.30
Guam	.96	.88	.87	

No multiplier is given for class A buildings for Guam. Although the multipliers were developed from data on Guam labor and material costs supplied to them, Marshall and Stevens caution that the multipliers should be considered "rough," since no labor efficiency deviation was included because it was assumed that labor has adequate construction tools and skills and because they assumed that profit and overhead on Guam are comparable to the Los Angeles situation. Commercial buildings represented by the multipliers are average quality buildings using locally procured material; they exclude air conditioning, high quality interior finishing, carpeting, and other imported items.

No multipliers are given for residential construction, but Marshall and Stevens indicated that Guam multipliers were one to two points lower than residential multipliers for Los Angeles. At least one real estate operator on Guam has obtained cost estimates using the Marshall and Stevens handbook, which he considers accurate for Guam.

B. Professional and Business Services

Ancillary business services refer to commercial services for which an economic enterprise has need but which do not provide a direct input to the enterprise. In many instances, if the service is either unavailable or of unacceptable quality, the enterprise must add it to its overhead burden. Essential professional and business services are available in Guam, although availability, cost and quality of services are quite variable. Although individual opinions as to the adequacy of professional and business services must be treated with caution, a consensus of surveys of businessmen in Guam provides an indication of the overall assessment of ancillary services.

Two services which most enterprises will require are accounting and legal aid. In general, businessmen who were asked about the adequacy and cost of accounting work on the island felt that both could be vastly improved. Some businesses (particularly the larger ones) maintain their own accounting staff which they have trained to their own methods. The attitude regarding legal services was varied.

[3] Letter from Arne W. Haaland, Marshall and Stevens Publication Co., Los Angeles, Calif., Jan. 13, 1964.

Some felt that a lack of competition has led to excessive charges and inefficient service, while others find competent legal representation available in Guam. It is likely that services in these two areas are similar to those available in a stateside city of comparable size, with the exception that Guamanian businesses find it almost impossible to utilize specialized services such as would be available in metropolitan cities.

Repair and maintenance services for equipment and facilities are generally available, particularly for heavier equipment. This situation stems, in part, from the practice of the military to import alien labor for a wide variety of labor skills. In some instances, local residents have been trained for this work, but most of the workers are Filipinos. Future prospects for skilled repair and maintenance services will depend partly upon success in training local residents and their interest in going into skilled mechanical work.

The availability of supplies and equipment required by businesses is generally considered adequate, although most respondents understandably complain of the high shipping costs and times. The period of time necessary between order and receipt of items usually requires Guam businesses to maintain a larger inventory of supplies and essential equipment than would ordinarily be necessary. Industries requiring frequent recourse to a variety of parts suppliers, subcontractors and other specialized services, particularly on short notice, may encounter some difficulty. Export industries using imported subassemblies and parts, for example, will have to plan their operations for maximum self-sufficiency, perhaps down to a level of detail not ordinarily necessary. However, in most cases, this will not present any serious problem.

C. Banking Services and Credit

Adequate commercial banking services are available from local branches of two major U.S. banks with international connections.

Credit sources in addition to the two banks include a savings and loan association, a small business investment corporation, the Guam Housing Corp. (formerly the Guam Finance & Development Corp.), and the U.S. Small Business Administration. The Federal Housing Administration is also locally represented.

Terms for private credit remain unfavorable by mainland standards, even though there has been considerable improvement since Typhoon Karen. In 1965, banks were making conventional real estate loans at about 7 percent interest for a maximum of 10 years, with 7 or 8 years more typical. An increasing number of FHA loans for periods up to 35 years were being made. Most commercial loans were short-term inventory financing (60 to 90 days) at about 7 percent. Consumer installment loans up to 24 months were made at interest rates of 6 to 9 percent. The savings and loan association (with an interest rate on savings deposits of 4 percent) made conventional home loans at 8 percent for periods up to 15 years. Some loans are thought to have been made by individuals at rates as high as 12 to 20 percent. (By way of comparison, prior to Typhoon Karen, conventional real estate loans were made only for 2 or 3 years.)

The Small Business Administration, in contrast, had approved 1,130 disaster loans at interest rates of 3 percent for periods up to 20 years at the time its disaster loan program was completed. As of mid-1965, 721 disaster loans and 4 regular SBA business loans were outstanding in the amount of $8.1 million. Nearly $2.4 million of this was represented by 76 business loans, and the rest were home loans. The Guam Finance and Development Corp. at mid-1965 had outstanding loans of more than $2.8 million, of which over $600,000 was in agricultural and commercial loans, the remainder being low-cost housing loans. Most of these loans were at 5 percent interest, and none exceeded 6 percent. The Small Business Administration is now restricted to its regular business loan programs, and its future role in financing economic development in Guam will depend mainly upon the availability of funds to SBA as a whole, the prospect of which is uncertain. The Guam Finance and Development Corp.—now the Guam Housing Corp.—will be able to use its receivable housing loans as a revolving fund for future housing loans. But it appears that credit for the competing demands of housing and business financing will now depend much more heavily upon commercial credit sources (supplemented, in the case of housing, by FHA programs).

Uncertainty about the economic outlook in Guam has undoubtedly been a major factor in the restrictive credit situation in past years. Increased banking competition has helped to ease credit availability, but much of the uncertainty will remain until experience demonstrates the ability of Guam's private sector to develop along lines less dependent upon military spending. Fortunately, off-island investors were generally found to have their own sources of capital, and

export industry development will not depend critically upon local financial capabilities. The main problem presented by Guam's capital-short status is that of assuring an adequate supply of credit at reasonable rates from local sources for business in the local service sector and for housing. Federal loan guarantee, loan participation, and direct loan programs will continue to be needed for these purposes.

D. Public Services

The government of Guam furnishes water, power, and telephone service to all civilian subscribers (both residential and commercial) at the following rates: Water, 50 cents per 1,000 gallons, or a minimum charge of $2. Telephone, the government of Guam, in cooperation with the Navy, operates a system serving over 3,500 telephones (excluding the military).

	Residential	Business
Individual line	$5.50	$10.00
2-party line	4.50	12.00
Rural service	3.50	10.00

Power

Kilowatt-hour rate blocks	Kilowatt-hours	Rate per kilowatt-hour
1. Residential electric service:		
1st	40	$0.07
Next	40	.06
Do	120	.03
Do	300	.023
Over	500	.02
Minimum monthly charge		.50
2. Electric service for businesses, schools, etc., for electrical loads of less than 10 kilowatts:		
1st	100	.035
Next	200	.05
Do	300	.045
Do	400	.04
Do	1,000	.03
Do	2,000	.025
Over	4,000	.02
Minimum monthly charge		2.50

There is a demand charge and a rate block price differential for electrical loads over 10 kilowatts.

Although rates tend to be high in comparison with their own experience in various parts of the United States, businessmen typically feel that power and water services are generally adequate. The telephone system cannot keep up with the demands being made upon it, but additional trunkline and switching capacity now planned will help correct this condition and perhaps allow more prompt installation and servicing of home and PBX equipment as well.

E. External Communications

The Radio Corp. of America serves Guam's requirements for overseas communications with overseas telephone and radio dispatch facilities to and from almost any point in the world. Both Telex and data communication circuits are now possible with the May 1964 completion of the transpacific cable and direct cables to Japan and the Philippines in early 1965. In general, most businessmen consider the communications links with the U.S. mainland, the Far East and southeast Asia sufficient for their purposes. A consensus of businessmen's comments on Guam appears to suggest that, while present telephone and cable links will be adequate for future economic development, local service facilities for overseas communication will need to be improved if traffic increases significantly.

It is generally appreciated that mail and parcel post rates between Guam and the U.S. mainland are extremely favorable, and that this will be a factor of considerable significance to Guam's future economic growth. However, the unreliability of delivery time to and from the U.S. mainland is a matter of some concern to local businessmen. And there can hardly be any question that the

apparent bottleneck in the flow of mail through Honolulu should be eliminated. Because of the absence of home numbers and home delivery on Guam, most mail is picked up and sent at the central post office, causing considerable congestion there. This imposes certain burdens and costs upon businesses which could be reduced by forcing greater use of substations as a substitute for a full-fledged system of street address deliveries.

F. The Commercial Port

The commercial port of Guam occupies an area of 24.5 acres and is equipped to handle containerized as well as conventional cargo.[1] It has 110,400 square feet of warehouse space and 2,400 linear feet of deepwater docking, sufficient to berth three cargo vessels. Commercial port rates and charges are as follows:

	Stevedoring	Handling	Transshipment
Basic	$2.05	$2.40	[1] $3.20
U.S. mail	[2]	[2]	
Copra/trochus [3]	1.05		3.20
Empty vans [4]	2.05	2.40	3.20
Metal drums	.75		
Rolling vehicle to ¾ ton [4]		20.00	
Household goods [4]		.70	
Other containerized cargoes		.80	1.20

[1] Minimum is $1 per bill of lading.
[2] Cost plus 15 percent.
[3] Negotiable.
[4] Minimum.
[4] Each.
[4] Per ton of 40 cubic feet.

Other commercial port charges include the following:

(*a*) *Overtime.*—An overtime charge is levied for work performed on regular nonworking days plus an additional 10 percent.

(*b*) *Hazard pay rate.*—Rates vary from 5 to 10 cents per hour per member of the work crew and are levied upon frozen or chilled cargo, bagged cement, live cargo, scrap metal cargo, and ammunition or explosive cargo.

(*c*) *Special services.*—Cost of personnel, plus 15 percent, plus cost of materials.

(*d*) *Dockage charge.*—One and one-half cents per registered ton of the vessel per day or fraction thereof.

(*e*) *Water charge.*—Twenty-five cents per metered ton or fraction thereof.

Import cargoes are given free storage for a period of 7 days, exclusive of weekends and holidays as well as nonworking weather days. Export cargoes are given free storage for a period of 10 days, exclusive of the same days as above. Transshipment cargoes must be loaded on the first available vessel making earliest arrival destination. Otherwise, storage charges will accrue as of the date of departure of such vessel.

Warehouse storage charges are at the rate of 50 cents per day per revenue ton for the first 15 days after the free period and $1 per day per revenue ton for each day thereafter. Charges for private storage range between $2 and $3 per cubic ton per month. Outside storage charges on paved areas are 25 cents per day per revenue ton for each day after the free period (except weekends, holidays, and nonworking weather days). On unpaved areas, the charge is 1 cent per square foot per month.

Businessmen's comments about the commercial port, like those concerning the post office, are at both ends of the spectrum: the port is doing an acceptable job, or there is "room for 100 percent improvement." Most pro comments reflect the feeling that it is well run as a governmental department, considering the quality of equipment available and the condition of facilities after Typhoon Karen. As might be expected, comments critical of the commercial port are more vehement. In general, criticism centers around the cost of services, the slowness of services, carelessness in unloading and storing cargo, waste in use of port facilities and equipment, theft and pilferage, and inept management. Some feel that construction of the new commercial port will alleviate some of the problems; others insist that the port must be removed from political control in order to achieve an efficient operation.

[1] "Facts About Doing Business on Guam," Department of Commerce, Government of Guam, 1964.

G. Housing

Guam has a housing shortage and, beyond that, a housing problem centered upon substandard dwellings and the associated difficulty of providing low-cost housing at modern standards. However, it does not appear that the housing situation in Guam will present serious obstacles to the attraction of off-island investors and managers for export industries, even though housing is a somewhat sensitive factor in investment decisions. Subdivision homes in the $13,000 to $18,000 range are being provided under FHA terms, and more expensive housing can be found or built to the buyer's specifications. Private rental units are scarce and relatively expensive, but continued construction of middle-priced housing for purchase will provide a satisfactory alternative for managers and technicians employed by new industries.

APPENDIX 5—PUBLIC EDUCATION, VOCATIONAL AND TECHNICAL EDUCATION, AND THE COLLEGE OF GUAM

A. Public Education

Guam's current, postwar education only a few years ago saw its first students complete the 12-year cycle included in its curriculum. Its short history, rapid growth, and conditions specific to Guam have created many problems. In this appendix, some of these problems and the attempts to solve them are discussed.

Under the provisions of the organic act, the Governor of Guam is responsible for the territory's educational system. The executive and administrative responsibility is met through the department of education, an operating department of the government of Guam, headed by a director with duties analogous to those of a State director of education. Local-level administrative and supervisory duties fall under a superintendent of schools. The department's administrative staff is completed by four assistant superintendents (instruction, business, personnel, and vocational) and their personnel. A board of education, appointed by the Governor, guides and monitors department activities. Two members of the Armed Forces sit on the board in an advisory capacity.

1. Enrollment

Trends in public school enrollment in Guam for the period 1957–65, together with enrollment projections through 1970, are indicated in table 1. While somewhat cyclical, the growth trend of enrollment follows the birth rates indicated in appendix 1. The relatively steady increase in enrollment is somewhat surprising in view of the heavy contributions to the total made by military and other federally connected families living on Guam. The bulk of students classified as "nonresidents" by the department of education come from this group, and in the 1964–65 school year they accounted for 25 percent of elementary and 20 percent of secondary enrollment. Over the past several years, the general trend of Navy or Navy-connected dependents has been downward. In 1957, there were 1,524 such students, and in 1963, only 1,041. On the other hand, the Air Force and Air Force-related contribution has been steadily increasing over the same period, resulting in a more or less steady input from both sources. Thus, like other communities closely associated with large military installations, Guam is faced with the vagaries of planning at higher levels in attempting to plan its physical facilities and staffing needs in the future.

In addition to difficulties in long-range planning resulting from the large military and federally related presence in the schools, the "within year" enrollment fluctuates greatly due to rotations and transfers. The enrollment forecasts in table 1 are based on relatively stable military and federally related enrollment, with the gains derived from birth rates and lower dropout rates.

TABLE 1.—*Historical and projected enrollment in Guam public schools, 1957–70*

School year	Grades 1–6	Grades 7–9	Grades 10–12	Total
1957–58	8,925	1,986	1,458	12,369
1958–59	9,288	2,367	1,432	13,014
1959–60	9,286	2,717	1,586	13,589
1960–61	8,915	3,009	1,592	13,647
1961–62	8,799	3,312	1,850	14,060
1962–63	8,952	3,596	2,483	15,031
1963–64	8,728	3,458	2,712	15,033
1964–65 [1]	9,677	3,538	2,761	15,985
1965–66 [2]	10,091	3,777	3,463	17,331
1966–67 [2]	10,339	3,900	3,220	17,456
1967–68 [2]	10,748	3,991	3,588	18,627
1968–69 [2]	11,304	3,310	3,593	18,207
1969–70 [2]	11,455	3,689	3,726	18,820
1970–71 [2]	11,731	4,043	3,961	19,735

[1] Department of education, statistical report, school year 1964–65.
[2] Projections by department of education, 5-year plan, attachment D.
Source: Department of education, government of Guam.

2. PHYSICAL FACILITIES

Guam's public school plant consists of 17 elementary and 7 secondary schools, most of which were built (or are under construction) subsequent to the 1963 typhoon. The secondary schools include three junior high schools, two junior-senior high schools, one high school and a trade and technical school. The building program, financed to a large extent with Rehabilitation-Office of Emergency Planning funds, is scheduled for completion during fiscal 1967. Based on predicted enrollment, the plant at that time should be sufficient for Guam's needs. An exception is the secondary schools where double sessions are now conducted, and which will continue to have insufficient space for some time. Some of the pressure on the secondary school facilities is being relieved by adding a seventh grade to certain elementary schools and utilizing temporary buildings where required. In general the schools are modern, attractive facilities that would be the envy of many stateside communities of Guam's size.

3. CURRICULA

A listing of courses and area subject matter offered in Guam's schools would reveal a curriculum which in all respects resembles that of the average stateside school system. This situation has evoked criticism by the department of education staff[1] and by others concerned with special aspects of the school system's operations.[2] The main point of this criticism is that special conditions on Guam are not recognized in the existing curriculum guides nor in the teaching materials provided to the teachers. These critics view this deficiency as particularly unfortunate in the elementary schools.

Aside from the special problem caused by the many bilingual students, curriculum development on Guam has been hampered by two problems: rapid staff and instructional turnover, and a lack of curriculum specialists. A large step in the solution to the latter problem has been made in the hiring of several specialists for the current school year. Unless the continuity of the efforts of these specialists can be assured through greater staff retention, much of this effort and expense may be wasted.

4. OPERATING EXPENDITURES

As with most U.S. communities, Guam allocates a substantial portion of its budget to education. In fiscal year 1965, about 28 percent was allocated to department of education operating expenses alone, and for fiscal year 1967 this allocation will approach 35 percent. In his annual message (January 1966), the Governor estimated that total costs (excluding College of Guam, transportation costs, etc.) for education on Guam for fiscal year 1967 would exceed 51 percent of the total budget.

The general fund expenditures for operating expenses of the public schools on Guam are presented in table 2.— In the period indicated, the per student expenditure has lagged considerably behind the U.S. State average. In 1965 Guam's per student expenditure was 69 percent of the average U.S. expenditure, and in 1962 it represented only 59 percent.

TABLE 2.—*General fund and per student expenditures for public education on Guam, 1957–65*

School year ending—	General fund expenditures[1]	Total annual enrollment[2]	Per student expenditures
1957			
1958			
1959	$2,347,137	12,529	$187
1960	2,662,761	13,441	198
1961	3,041,019	14,147	215
1962	3,613,157	14,641	247
1963	3,845,294	14,591	264
1964	4,213,689	14,917	282
1965	4,372,750	15,591	281
1966	4,144,088	15,124	274
	4,967,518	15,985	311
	5,349,924	16,800	318

[1] General fund expenditures are taken from the 1951–64 annual reports.

[2] Total enrollment is, of course, higher than average daily attendance (ADA) upon which per student expenditures are usually based. As a result, the per student expenditures are somewhat deflated. Comparative ADA figures for all years were not available.

[1] See prefatory remarks to proposed budget of the department of education, 1965–66.

[2] Charles F. Hackett, "Recommendations on Language Policy in the Trust Territory of the Pacific Islands and in the Territory of Guam," 1961.

Guam's governmental and school officials point out that such comparisons are misleading because Guam's reported operating budget does not include many items directly related to education (e.g., transportation costs, schoolbuses) and that their inclusion would indicate that Guam's per student expenditures are not out of line with the U.S. average. Indeed, the per student expenditures published annually in the Statistical Abstract of the United States do include many variables that make comparisons among States (particularly if they are close) somewhat risky. On the other hand, they do provide a rough gage of comparative expenditures, and in past years Guam has lagged behind the average.

The important point, however, is not how much Guam spends for education compared to average U.S. expenditures but, whether in terms of its goals, needs, and resources, it is spending enough. Average teachers' salaries have increased almost 5 percent per year since 1960.[3] In spite of two adjustments of teachers' pay schedules since that time, Guam's teachers' salaries have not kept pace, and it is likely that the recruitment program will suffer unless improvement is made. This is particularly true in the case of the more experienced, more highly paid teaching staff.

5. PERSONNEL TURNOVER

Guam's school system suffers from a lack of continuity and stability caused by high turnover of its administrative and instructional staff. One of the results of the administrative staff turnover—inadequate curriculum development—has been previously mentioned. Under the provisions of recent legislation (bill 111), the department of education has incurred additional responsibilities, and the need for stability and administrative continuity is even more important. The department's organization appears to have been strengthened by the creation of a new position, assistant superintendent for vocational education, and the acquisition of several educational consultants. With these additional personnel and functions, together with administrative responsibilities in new areas (personnel and purchasing), the time seems ideally suited for a management study of the department's organization and operations.

Since the mid-1950's, Guam has relied heavily upon contract teachers from the U.S. mainland. In addition, contract teachers' dependents and military dependents contribute to the instructional staff. The availability of experienced dependent teachers permits substantial savings over the costs of recruiting and transporting teachers from the U.S. mainland. In the 1964–65 school year, the number of instructional personnel from the component sources was as follows:[4]

Contract teachers	177
Contract teachers' dependents	56
Military dependents	162
Local hires	250

Because of a high annual turnover, an extensive and expensive recruitment campaign must be conducted on the U.S. mainland. The recruited teachers and their families are transported to Guam at Government expense to serve a 2-year term. Unlike civil service contract workers associated with military operations, contract teachers do not receive a "hardship" or territorial post differential (TPD) allowance, nor are they granted commissary or exchange privileges. The only tangible fringe benefits not generally available to teachers elsewhere are the provision of modest housing at rent levels considerably below Guam's market level and the possibility of utilizing travel allowances for travel not necessarily connected with a return trip to their homes.

In 1965, 63 new teachers were recruited from the mainland.[5] It has been estimated that the cost of recruiting and transporting one teacher averages about $5,000.[5] There are presently 201 contract personnel in the department of education, resulting in a cost of more than $1 million for this group alone. Costs related to turnover can be appreciated when one considers that half of this group has been in the system less than 2 years, and the average longevity of all contract personnel is 2.2 years. The Guam experience of the contract educational staff is presented in table 3. At current employment levels, Guam will expend annually hundreds of thousands of dollars in return for essentially nonproductive or at

[3] At the beginning of the 1965–66 school year, the mean salary of 185 contract teachers was $5,482. The Statistical Abstract of the United States (p. 125) lists the average salary of all U.S. teachers as $6,235. The highest average salary was in California ($7,900), and the lowest was in Mississippi ($4,103). Guam's contract teachers are split almost evenly between the two highest and lowest salary categories of the teacher pay levels established by personnel policies.

[4] Annual Report, Department of Education, 1965.

[5] Department of education presentation to the economic development commission, March 1965.

TABLE 3.—*Academic years spent on Guam by contract educational personnel*

Experience Level	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Total	Median academic years	Average academic years	Percent 1st year teachers
Teacher VI	4																				
Teacher V	8																				
Teacher IV	10	11	6	8	2	4	1	4	2	2	2	1						52	1	2.2	32
Teacher III	25	14	12	24	4		5	1	2	2	2	1					2	183	1	2.2	32
Total	39	33	32	37	6	5	6	5	3	2	4						2	291			
Vocational instructor											1										
Program consultants																					
Principals	3	1	2	1	2	1															
Superintendent				2	2	3															
Total	63	34	34	40	10	9	6	5	3	2	5	1					2	291			

Source: Guam Department of Labor and Personnel.

best marginally productive educational benefits, and the situation will worsen in the next few years. While the overall number of teachers is increasing, both the number and proportion of contract teachers will increase as the retirement of local resident teachers occurs at a rate approximating the output of the College of Guam.[6]

The present system, which relies heavily upon contract teachers, may be the only way to maintain an American school system in a distant American area; and perhaps the financial and educational costs of teacher turnover should be accepted until the College of Guam can produce enough teachers from local sources. Turnover will certainly be high so long as military dependents contribute a large proportion of the island's teachers (currently about 25 percent), but as mentioned previously the value of this group far exceeds the disadvantages of their temporary nature. In considering the contract teachers, however, the present system can at least be called into question.

If retention of more contract teachers is considered a worthwhile goal, the present system appears to be self-defeating. Why should a teacher renew his contract? The pay is not high, and fringe benefits are modest at best. More importantly, the lack of opportunity for career development in the Guam system must weigh heavily against contract renewal. If, on the other hand, the contract teacher could see a future with adequate salary, advancement possibilities, security, and a pension (as he can in most stateside systems), he might well remain to teach on Guam as a resident. It is not suggested that the civil service type employment arrangement be offered to all contract employees. A probation period—perhaps the duration of the first contract—could serve as a basis for evaluating performance. The contract system would, of course, remain in existence to supplement the permanent teacher program. Any such program as that sketched above would require a revision of section 9(a) of the Organic Act as recommended by the current Governor and other responsible persons on Guam.

If, on the other hand, it is felt that it is in Guam's best interests to continue to rely upon contract personnel for the next several years, consideration should be given to the reestablishment of the territorial post differential at a level comparable to that previously used. This approach faces squarely the fact that education is an import commodity to Guam and will, as in the case of other imports, bear an additional cost.

6. ACADEMIC ACHIEVEMENT

Scholastic achievement of Guamanian students is periodically assessed by means of standardized achievement tests. Norms for these tests are designed to represent a cross-section of achievement levels in the entire United States. In the aggregate, the system's children do not fare well on these tests, but the components of the overall results point out the educational problems involved. As a group, stateside children (usually military dependents' children) [7] do as well or better than their mainland counterparts; local children as a group score lower than the national norms; and the trust territory students score considerably lower still. While cultural conflicts and their emotional concomitants contribute to the achievement levels, it has long been recognized that the bilingual nature of the local children (as with all bilingual groups) hinders their achievement at a level expected by the system.

Given time enough, this "language problem" will diminish as English becomes more prevalent in Guamanian homes. In the meantime, however, thousands of local youngsters are being deprived of a substantial amount of the education available to them. Some immediate action should be taken. In this regard, the recommendations of Dr. Topping [8] and Dr. Hackett [9] should be seriously considered by the Department of Education.[10] Briefly summarized, these recommendations include—

(*a*) Those teaching English to Chamorro children should have at least minimum control of the Chamorro language.

[6] This fact was pointed out in the department of education's 5-year plan.

[7] Unpublished research by the Department of Education's guidance and testing staff points out that "stateside" children actually do better than the national norms on standardized achievement tests. Similar findings have been reported in studies of achievement levels of students attending overseas dependents schools. These schools have problems similar to Guam's, particularly with high teacher turnover rates.

[8] D. M. Topping, excerpts from "Chamorro Structure and the Teaching of English," no date.

[9] Charles F. Hackett, "Recommendations on Language Policy in the Trust Territory of the Pacific Islands and in the Territory of Guam," 1961, Department of Education, Agana, Guam.

[10] See also Charles W. Mason, "English, Special: Teachers of Culturally Deprived." Final report to NDEA Institute, Code E123-S123, June 1965; and James G. Cooper, "Conversational English for Non-English-Speaking Children."

(*b*) Teaching materials in keeping with the local situation should be developed. ("Dick and Jane" will not do.)

(*c*) The Department of Education should have a resident language specialist.

English teachers, then, should be bilingual and have undergone some linguistics training. They should teach English to the Chamorro children in special classes, using teaching aids and materials specially prepared for Guam. Where will these teachers be found? The required skills can hardly be acquired in a 2-year contract period, and the loss of a teacher well versed in these skills would be doubly expensive. Unless some system is created for retaining teachers on a basis analogous to stateside schools where nominal turnover is experienced, the burden must fall on local teachers. The College of Guam output and special institutes (such as that held this past summer) will definitely help, but the pace of improvement realized here will be quite slow.[1]

7. TEACHER QUALIFICATIONS

As a matter of necessity, Guam hired many uncertificated teachers in the years following the war. For some time these teachers comprised the majority of the instructional staff at all levels of the school system. Gradually, with the return of mainland-trained local teachers, the availability of qualified military dependents, and through contracting stateside teachers, the proportion of qualified (certificated) teachers in the secondary schools became essentially the same as on the mainland.

The transition in the elementary schools has been much slower, and today approximately 40 percent do not possess the B.A. degree. The educational status of Guam's local teachers during the past school year is indicated below in table 4.

TABLE 4.—*Degrees held by instructional staff, Guam Department of Education, 1964*

Educational status:	Degrees
M.S. degree	43
B.S. degree	324
College, 3 years	25
College, 2 years	153
College, less than 2 years	79

Source: 1964 Annual Report, Guam Department of Education.

8. SECONDARY SCHOOL ACCREDITATION

The accreditation agency for the Guam secondary schools is the North Central Association of Colleges and Secondary Schools (NCA). Apparently, Guam's association with this agency results from the fact that the NCA is the accrediting body for the Department of Defense overseas dependent schools. As such, it was the only agency able or willing to assure responsibility for assessing the quality of a "remote" school system such as Guam. Within the NCA, Guam falls under the jurisdiction of the American Dependent Schools Committee.

Guam's secondary schools were placed in a "warned" status by the NCA, based upon deficiencies discovered during two consecutive reviews. While the criticisms of the secondary schools ranged over many areas, for the most part they centered about the administrative problems, particularly what they considered insufficient autonomy of the department of education. As previously mentioned, the autonomy called for by the NCA criteria have been granted through the provisions of recent legislation and by executive order of the Governor.

B. PRIVATE SCHOOLS

More than 25 percent of Guam's school-age children attend private schools. Most of these (5,365 students) attend the Catholic school system of the Vicariate Apostolic of Guam. The system consists of seven elementary schools and two small high schools. While it was not possible to investigate these schools during the course of this study, it was obvious that they enjoy an excellent reputation among the local residents and the military families residing on Guam. The curriculums of the high schools is restricted to academic subjects containing no industrial arts or vocational education options.

[1] "Conversational English for Non-English-Speaking Children" by Cooper (see preceding page) points out some of the difficulties to be expected in a program of this kind. While the experimental procedures did not incorporate all of the suggestions of Topping, Hackett, and Mason, they did involve heavy emphasis on improving "reading readiness" through emphasis on conversational training.

C. Vocational and Technical Training

Guam's acute need for large-scale vocational and technical training has long been recognized. In the past, recognition of this need centered upon the lack of skills of the local population, a situation resulting in large-scale, sometimes "crash" importation of workers from outside sources. While the need was recognized and discussed, and while some people were trained (mostly by the Navy), little progress resulted in training local labor on any significant scale. A lack of motivation by both the users of labor (who could obtain skilled labor at bargain prices from the Philippines) and the local work force itself (able to choose among many relatively low paid job opportunities) has contributed to the Territory's low level of skill acquisition. However, recently the basis for the recognition of the importance of vocational and technical education has changed. There is an awareness, particularly in government, tht skill development is no longer merely an attractive and worthwhile goal but a necessity if the local population is to participate fully in the economy of Guam and, for that matter, in the changing economy of the rest of the United States.

A survey of Guam's manpower resources conducted in 1964 [12] pointed out the serious opportunity imbalances in the employment hierarchy experienced by local labor. Far more important was the rising volume of young people beginning to seek jobs. The most likely possibilities for these new entrants are in alien labor replacement and in jobs which, by definition, require special skills. The magnitude of the training and vocational education job to be done on Guam can be appreciated when one considers that, conservatively, between 450 and 550 young people yearly will enter the labor markct in a capacity requiring some form of institutionalized training.[13] In addition to this source are large numbers of currently underemployed young people who are potential candidates for vocational education.

Fortunately, the basic elements for an increased pace of vocational training already exist or are developing. Current programs are:

Military related programs

The Armed Forces—particularly the Navy—have the longest tradition of training programs for local residents. Navy programs offered are apprentice, shop learning, and career advancement (presupervisory and supervisory). In addition to the more formal programs, both the Navy and Air Force provide on-the-job training (OJT) in almost all positions filled by civilians.

The Navy has provided Guam with two types of organized skill-gaining opportunities (the shop learner system and the apprentice method) and a variety of informal programs. In the last few years, the consolidated industrial relations office (CIRO) has assumed coordination and sponsorship of all these programs. CIRO is attempting to achieve a two-step objective with these training programs: (1) replace alien contract workers with local residents, and then (2) replace stateside contract workers with local residents who have been promoted from journeyman to staff and supervisory levels.

Formal naval training has not always been as well defined and organized as is today. Sporadic attempts to provide similar training apparently failed in 1948, 1949, and 1963—the first because of insufficient language skills of the trainees, and the others because altered mission requirements necessitated the acquisition of full skill labor within a short time period. The Navy utilized local residents during this period through informal on-the-job training. In 1954, local residents comprised 35 percent of the Navy's authorized (civil service) positions, distributed in the skill categories shown in table 5.

---

[12] Odessa Dubinsky, "Survey of Manpower Resources, 1964–70," Territory of Guam, June 1964.

[13] The assumptions underlying this rather informal projection are as follows: (a) A 40-percent dropout rate. The graduating classes represent about 60 percent of those students entering the system 12 years earlier. These dropouts constitute an even greater training problem. (b) The number of males and females graduating high school is about equal. Forty percent of the graduating class goes on to college. Forty percent of these drop out and enter the labor market. Only 10 percent of the new college females will enter the labor market. Each year, 100 noncollege males will enter military service.

TABLE 5.—*Distribution of skill levels, U.S. Navy employment, 1954*

	Number	Percent of total	Authorized ceiling	Percent occupied by Guamanians
Professional and technical	7	0.9	237	3.1
Supervisory (graded and ungraded)	41	4.9	331	12.2
Skilled (journeyman level)	516	62.3	1,503	34.3
Semiskilled (helper level)	155	18.7	155	100.0
Unskilled	109	13.2	109	100.0
Total	828	100.0	2,325	35.5

Source: "Staff Study on Development of Guamanians as a Source of Labor Supply for Naval Activities," Commander Naval Forces Marianas, 1954.

Often during this period positions were filled by local residents by waiving education and experience requirements. The policy of overclassification produced a bulge at the journeyman level (516). This category included 62.3 percent of the total civil service Guamanians and 34.3 percent of the authorized journeyman strength (44 percent of actual journeyman strength). The Navy also employed 155 semiskilled local workers.

After a reassessment of its lack of progress in its training objectives (off-island labor import replacement), the Navy instituted a 4-year resident apprentice program in 1956. The shop learner system, with its major emphasis on doing and very little on trade theory, had been relatively ineffective. The apprentice program has since provided a small but consistent upgrading influence on Guam's local labor force. Graduating on the average about 25 apprentices per year, the program has supplied Guam with approximately 160 additional journeymen over a 6-year period (1960–65). The separation rate has been approximately 45 percent. Table 6 indicates the program's experience.

TABLE 6.—*Navy apprentice program experience, 1960–66*

Graduating class

	1960	1961	1962	1963	1964	1965	1966
Original enrollment	30	41	58	46	62	54	47
Number completed	18	23	26	28	(1)	[2] 25	.....
Percent separation	40	44	55	39	.....	54	.....

[1] Not available.
[2] Scheduled to graduate November 1965.

Source: Consolidated Industrial Relations Office.

The diverse scope of naval activities allows a wide range of skill-gaining opportunities which, while exceeding the trade and technical school in many areas, is limited in its scope by the availability of qualified instructors. Of course, while some of the trades represent specialized training of high benefit to the Navy only (shipfitter), most are general enough to be applicable elsewhere (heavy-duty equipment mechanic, machinist, painter, plumber, etc.).

Program entrance standards of the Guam trainees are equivalent to stateside levels (entrance requirements were relaxed initially to obtain sufficient trainees). The upgrading of island high school curriculums and more stringent graduation requirements have benefited the program positively, supplying since 1963 better qualified entrants who have demonstrated promise and enthusiasm. Starting instruction no longer needs to begin at the eighth- and ninth-grade levels. Correspondingly, curriculums and retention standards have been upgraded.

The shop learner system, requiring no prior experience, provides an entrance into civil service for those with less than a high school education. The program is informal, and its structure consists of three classifications. The trainee is classified as a "learner" for the first 6 months, after which he advances to "helper." Then, after 2½ years (or one-half the time needed to qualify as a journeyman), he becomes a "limited mechanic." Emphasis is on on-the-job learning, but candidates must attend mathematics and English courses at the trade and technical school as well. (About double the number of apprentices are enrolled in this program.)

CIRO also sponsors after-hours self-development programs and coordinates the presupervisory courses which are intended to help journeymen pass the supervisor qualifying tests. The major stumbling block to motivation and advancement is the English language. Local residents frequently refuse to take qualifying tests even though, in other respects, they seem qualified. There is an understandable lack of personal confidence based on past difficulties with verbal tests. The tests have a stateside frame of reference and are not designed for particular jobs (i.e., stevedore, machinist, etc.). For example, all candidates for leadingman in the various naval activities take the same test.

Each employment activity has informal on-the-job training for its personnel. For example, the Base Exchange and Commissary provide their unskilled labor with exposure to many aspects of the distributive occupations and even some of the diversified trades. Of course, such employment and initial training are continually employed as vehicles to qualify for higher or other positions in the different activities, resulting in a significant amount of internal mobility.

Guam apprentice program

This is a government of Guam-Guam Contractors Association program of recent origin whose purpose is journeyman development in the basic trades. Of the original 115 trainees, only 47 remained in the program less than 1 year later. Thirty-one of the trainees quit the program, and 27 were released by employers. Ten others left for noncompliance with standards or did not appear for training.

The relative lack of success of this program to the present time appears to be due to a failure of communication between the training personnel and the apprentices. All elements of this program should be reviewed and a new effort made to make trainees at the time of their selection thoroughly aware of the demands they must meet.

Vocational education

Vocational education has been available on Guam for 15 years. Until recently, however, vocational emphasis has remained low keyed. At the start of the 1964–65 school year, 258 students (less than 7 percent of Guam's total senior high school enrollment) enrolled at the trade and technical school. (Higher entrance requirements reduced 1965 trade school enrollment to about 170.)

Immediately after the passage of the Organic Act, the department of education sought to implement its new responsibilities assigned by sections 5r and 9a. A survey of island occupational needs justified the founding of the Guam Vocational School in 1951. A full-time vocational educator was recruited from the mainland, and adult evening courses were offered. The program was expanded the following year to provide preservice training (the basic trades—auto mechanic, carpenter, and cabinetmaker) for high school students. Simultaneously, a substantial number of evening courses (30) of short duration (8–10 weeks) were designed to fit the needs of the adult students.

For some reason, the department was unable to follow through and coordinate its successful start. In 1953, in order to support and expand the community college concept, the territorial college assumed full control of the adult education program. The day trades program remained under a comprehensive high school jurisdiction, spread among 13 departments (which included commercial, home nursing, home economics, industrial arts, and vocational). After failing in 1954 to interest the business community in developing a cooperative work-study program (including part-time, on-the-job training) for high school students, the department of education temporarily abandoned the proposal.

In keeping with the transition of the college's goals, the adult education program gradually shifted into a more academic context. A business curriculum for clerical and stenographic work was added in 1955, and emphasis was placed on more general and personal development-type courses. Citizenship and general English were also offered. In the high school, interest in vocational training also showed a decline. In the fall of 1959, only 13 students enrolled in vocational auto shop, 143 in agriculture, 247 in home economics, and 79 in home nursing.

Early in 1959, influenced by a U.S. Immigration Office decision to phase out alien contract workers beginning March 1, 1960, Guam's vocational-technical programs began receiving increased local government and business support. A survey indicated the critical shortage of local skills and the need to train and retrain island youth and adults to meet job requirements. Employment demand was greatest in the basic trades—automotive, electrical, and construction. The department of education revised the cooperative work-study program and established a 3-year senior high trade and technical school with separate facilities.

The cooperative program was divided into two divisions: distributive education (all aspects of marketing), and diversified training (skilled trades). Administrators of the skilled trades program understood employer needs and were able to maintain appropriate liaison to enable 54 student trainees to successfully complete the 1960–61 program and to justify its continuation. The distributive occupations program was terminated after the first year.

The increased scope accorded the trade and technical school since its start as an evening trade education in the spring of 1960 and the turnabout in student participation [14] are perhaps the best measures of the school's success in gaining community acceptance. In 1961, the school began coordinating the diversified occupations portion of the cooperative program and by fall 1962 offered day and evening training in the automotive, electrical, building, and refrigeration trades. For the academic year 1962–63, the school was also able to retain its day students full time for both trade and basic academic training. Typhoon Karen destroyed the Tamuning facilities, reducing substantially the school's capacity to carry on its 1963 training activities.

At present, the school offers five 3-year trade curriculums (elementary drafting was the latest addition) and the diversified occupations cooperative program. Entrance and performance standards have been raised.[15] Yet the trade school presently turns down highly qualified students because it still cannot offer solid subject matter in academic areas. Operations have been coordinated to complement MDTA vocational training activities. The adult evening program has been expanded to provide instruction and training for the government of Guam-Guam Contractors Association apprenticeship program and the Navy shop learner program.

Other prospects promise further improvement. The current department of education emphasis on ninth grade insdutrial arts might complement highly the trade school activities, providing not only larger numbers of applicants but also possibly eliminating the need for "shop orientation" courses (allowing offerings to be upgraded). When the school moves to its newer, larger location near the college,[16] it should be able to offer more comprehensive instruction in the present trades and introduce training in other skill classifications.

Considering the school's history and circumstances, the trade and technical school is providing the community with a good but limited educational service. At present, the school is unable to supply the quantity, quality, or distribution of skills demanded by the economy of Guam.

Manpower Development and Training Act

In less than 1 year, the Manpower Development and Training Act (MDTA) has become an important supplement to the strained capacities of the trade and technical school. It has also supplied a needed supplement to high school commercial courses, providing the skills necessary to make graduates employable. Designed to provide rapid and adequate training to the unemployed and the underemployed, the programs have already enabled initial graduates and non-graduates to obtain employment. Of 29 clerk-typists who graduated in June of 1965, 19 had been placed by September. Its success indicates in another fashion the community's need and demand for this more fundamental type of training. MDTA is providing training in clerk-typist and auto mechanic skills; entry training in carpentry, masonry-block laying, and welding; and plans to add a clerk-stenographer program.

The goal of this Federal program is to train and/or retrain individuals to the needs of a skill-demanding economy. The format of this program provides for "pressure cooker" training aimed at actual skill deficits of the community or region. This format, together with recent successful experiences, makes it well suited to Guam's needs.

Government of Guam

An inservice program designed to upgrade skills in almost all categories of government employment is sponsored by the government of Guam. Development of professional and subprofessional categories is conducted in liaison with the College of Guam.

---

[14] In the early 1950's, the majority of students were nonresidents; in the early 1960's, over 80 percent were local residents.

[15] A pupil can be returned to the academic high school if his average falls below C; quite a contrast to 1959 when planners expected the trade school to absorb "rejects."

[16] The new complex will be made up of six steel frame structures with a total training area of 30,400 square feet and expansion room for six additional structures.

Private business

As elsewhere, almost all employees require some training specific to the individual employer's operations. Because of the lack of skills on Guam, however, employers find themselves involved with informal on-the-job training to a greater extent than their mainland counterparts.

Vocational rehabilitation

This program is designed to develop occupational skills of the physically and mentally disabled. Here, need far exceeds capabilities of current facilities and personnel.

A state plan for vocational education on Guam (under Public Law 88–210, 1963) has been approved by the U.S. Department of Health, Education, and Welfare. On the basis of this approval, Guam is eligible for additional funds. Current plans call for developing expanded programs in the trade and technical school. Necessary plans and applications for participation in the Youth Corps program have been completed, and final approval is pending.

The listing of vocational programs presented above—many of quite recent vintage or still developing—indicates that a broad basis for training and technically educating Guam's youth is beginning to emerge. Every effort should be made to maintain the momentum generated by new programs such as MDTA, together with an expansion of the scale and pace of other programs. If the "stop-go" history of past vocational education is to be ended, some office, individual, or group of individuals with professional or direct economic and operational interest in the problem must undertake coordination of the various program efforts.

There are several formats for this function. One is a territorial board of vocational education proposed by the College of Guam.[17] Besides being the clearing agent and manager of all Federal vocational education funds, this board would provide broad leadership in all related areas and maintain liaison between involved public and private jurisdictions or agencies. In contrast to this proposed group (to be composed of a board of regents and business and labor representatives), it is suggested that any coordinating body consist of persons directly concerned with vocational education on a continuing basis.[18] Persons with this continuing interest and responsibility would be the assistant superintendent for vocational education; the MDTA coordinator; CIRO staff members; the Guam Contractors' representative; members of the College of Guam, the Guam Employment Service, and other government of Guam agencies. If such a group appears unwieldy, an alternative suggestion would be a core of department of education professionals maintaining necessary liaison with the other elements.

Whatever the constituency, the first order of business is the development of a comprehensive, islandwide plan for vocational and technical training. The scale of the required effort over a period of time can be estimated by a thorough application of factors such as those contained in footnote 13, page 179. Matching the training of potential candidates against future requirements is not difficult on Guam since there is little likelihood of producing surplus skills. But priorities should be established, based upon urgency of community need for particular skills and the probability of success in meeting these requirements.

Accompanying overall strategy development should be a thorough analysis of difficulties encountered in past training efforts on Guam. While it might be unfair to term the current apprentice programs failures, the fact remains that Navy programs annually graduate about 25 journeymen, the contractors' program presently has only 47 enrollees, and the Air Force has no apprentice training program at all. As mentioned earlier, interviews and discussions with Navy personnel revealed that the basic preparedness of entrants into the apprentice programs has vastly improved during the last few years. Similar improvements were also noted in motivational and attitudinal characteristics of the apprentices, and the dropout rate of new apprentices now is no more than that of similar stateside programs. In view of this, it seems likely that this aspect of Navy-sponsored training could be accelerated in the near future.

In summary, vocational and technical education in Guam is of sufficient importance that its diverse elements should be surveyed, assessed, and coordinated by a continuing body responsible to the government. The group's constituency should consist of vocational educators and others responsible for training programs.

[17] College of Guam, "Proposed Schemata for a Vocational Technical Institute for Guam," April 1965.

[18] This proposed group differs from the government of Guam-contractors' committee on apprentice training in that it would deal with all types of training in all areas of employment over a greater period of time. The proposed group is not an advisory body, but a group of professionals with an interest in vocational training.

The first task should be a plan covering all forms of training, vocational, and techical education.

The department of education's 5-year plan (fiscal years 1966–70) indicates little increase in the enrollment of secondary students in the trade and technical school. If current high standards are continued, and the planned curriculum is achieved, the trade and technical school will provide by far the best opportunity for entrance-level vocational education of any scale on Guam. Projected enrollment appears much too low in the face of Guam's problems, and the department of education should undertake a review of the plant, facilities, and staffing levels of this school.

While the College of Guam currently offers opportunities for post high school vocational and career training in business, no formal program exists for terminal training in trade or technical fields. College officials have frequently indicated the need and their willingness to operate such an institute under the college's control. Unfortunately, at least in one proposal,[19] the college would develop its institute using the department of education's trade and technical school facilities.

The status of the secondary vocational programs was not made clear in the proposal. Presumably these would be restricted to industrial arts courses in the high schools or vocational training in the present, inadequate facilities. There is definitely a need for post-high school technical training on Guam, but its development should supplement rather than replace present programs. A possible solution is the extension of the trade and vocational school through postgraduate offerings. The postgraduate curriculums would consist of extensions of secondary curriculums as well as programs available only to graduates. College of Guam participation in such a program would provide many advantages, including a ready staff of instructors in technical and supplementary academic areas. In addition, the prestige of a COG certificate would probably induce enrollment by graduates of the regular high schools as well as the vocational and trade school.

D. College of Guam

The Territorial College of Guam was established in 1952. While maintaining the emphasis on elementary education training, the college soon adopted supplementary aims, such as adult education, vocational training, and the provision of general education courses for those students wishing to continue their education elsewhere. Almost inevitably, considering the urgent needs of Guam, the community college concept was adopted in which any type of education or training desired by the population is offered—provided the community is willing to pay for it. Concurrent with its new and expanded role, the college soon acquired the adult education functions of the vocational school, offering full-year courses in the commercial and trade fields. Both the academic and community service aspects of the college's offerings were strengthened with the development of curriculums in social studies, mathematics, science, and languages in 1956, and the initiation of the extension program at Andersen Air Force Base in 1957.

In 1960 the college opened at Mangeiao, its present location, still operating as a 2-year community service institution but with a definite emphasis on developing an administrative and curricular core which could be expanded to a 4-year program. During that same year, the institution was renamed "The College of Guam." In April 1961, expansion to a 4-year, degree-granting college was accomplished by executive order of the Governor. In 1963 the college was separated from the Guam Department of Education, operating since that time under a board of regents.

In the face of the pressing demands of Guam, the college could not, even it it chose, completely abandon the community service philosophy that guided it since its inception. But there has been a sharp and self-conscious redirection toward a liberal arts program leading to the baccalaureate. The rapid development of the college since inauguration of the 4-year program has resulted in a spirit of high optimism and expansionism, with terms such as "University of Guam" and "Regional Research and Development Center" frequently used in published articles dealing with the future of the college.

[19] College of Guam, "Proposed Schemata for a Vocational Technical Institute for Guam," April 1965. Proposal not submitted.

1. RECOGNITION AND ACCREDITATION

Even in its early years, the college was quite successful in gaining acceptance from U.S. mainland colleges for their students and courses. In 1954, credits from the territorial college were recognized by 30 mainland colleges, and the college was included in the "Educational Directory of Higher Education" issued by the U.S. Office of Education. By 1957, credits from the college were accepted by 45 mainland schools, and the Western College Association (WCA) recommended accreditation for the territorial college for the 1958–59 school year. In 1962, the college gained probationary accreditation from the WCA and in 1965 full accreditation was granted for a 3-year period.

The WCA accreditation criteria are much less rigid and much less formalized than those of the North Central Association (NCA) in evaluating the Guam secondary schools. For example, the WCA (like the NCA) stresses that more autonomy should be given to the college in budgetary and certain administrative matters. However, the WCA does not threaten loss of accreditation in this regard as does the NCA. The recommendations presented in the WCA accreditation report are discussed later.

2. INSTRUCTIONAL PROGRAMS AND CURRICULUMS

The academic offerings and organization of the college have, quite naturally, changed frequently over the years, reflecting the changing demands of the student body and the needs of the community. The college was organized into three divisions (education, business administration, and general academic studies) until 1963, when the current seven-division organization evolved. The resulting seven divisions which incorporated the college's curriculums were agriculture and home economics; business administration; education and psychology; language and fine arts; linguistics; science and mathematics; and social science.

Since the beginning of the current school year, a reorganization has taken place in which the recently formed and much discussed linguistics division was abolished. While all of the details are not known to us at this time, presumably the nine offerings of the remedial English Language Institute formerly encompassed by linguistics have been absorbed by another division.

In addition to the curriculums of the academic divisions, the college offers a variety of courses to Andersen Air Force Base students on an interest basis. In keeping with its expanded role, the college is attempting to promote interest in bachelor degree programs among the airmen in the manner of the "bootstrap" programs conducted by several mainland universities.

Under a cooperative program with the Navy, the college provides an instructional program to supplement the vocational training of certain classes of civilian personnel. At the present time, the students participating in this program are supervisor candidates.

The organization of the college reflects its attempts to lead the community as well as its adjustment to the community's current needs. In general, the latter is reflected in the major courses of study chosen by the students. Table 7 indicates this choice by stated major fields for the last full academic year and the first semester of the current school year. The undeclared major group comprises the largest category for both years. This is not surprising, since the majority of students in both years attended on a part-time basis. Another factor contributing to the undeclared major group is the large number of students involved in remedial programs who may postpone their decision regarding a major study area until they are adequately prepared.

TABLE 7.—*Major fields of study of College of Guam students, 1964 and 1965*

Division	1964		1965	
	Number enrolled	Percent of total enrollment	Number enrolled	Percent of total enrollment
Agriculture and home economics	6	0.6	12	1.01
Business administration	257	26.8	247	20.88
Education and psychology	225	23.7	221	18.68
Language and fine arts	34	3.5	56	4.73
Linguistics				
Science and mathematics	82	8.5	90	7.60
Social science	46	4.8	131	11.07
Undeclared	308	32.1	426	36.01
Total	958		1,183	

NOTES.—(1) Number enrolled computed by averaging spring and fall enrollment; (2) fall semester only. Spring semester usually sees a substantial drop in enrollment.

Sources: 1964 enrollment data from College of Guam Annual Report, fiscal year 1964–65 (draft). 1965 data from interview at COG, September 1965. Data include both full-time and part-time students.

The already significant impact of the College of Guam can be appreciated by noting that the largest group of students is majoring in business and education. An immediate benefit derives from those students acquiring skills in the various business areas. These skills are sorely needed by the business establishments of Guam as well as by Federal and territorial government agencies.

However, the most significant long-range contribution derives from the improvement of teachers currently in the school system and in the training of additional teachers. From table 7 it can be seen that the number of students majoring in education ranks second to the business majors. While the absolute number of students majoring in education remains fairly high, the relative proportion is diminishing. Since one of Guam's most urgent problems lies in education and, in particular, in the quality and quantity of its elementary teachers, this relative lessening of education majors is quite unfortunate. For its part, the government attempts to promote and accelerate teacher training by offering monthly stipends to Guamanian students with education majors. These are quite modest sums ($50 to $100 on a sliding scale, based on the class level of the student) and apparently have not been overly successful in attracting students. The WCA accreditation report suggests that the local teaching commitment may account for the paucity of students taking advantage of this assistance program. The heavy emphasis of the college administration upon a broadened liberal arts program may also have accounted for the lessening impetus in teacher training. Hopefully, students represented in the other major areas include substantial proportions of secondary school teaching candidates.

The pervasive disinterest of Guamanians in agriculture (noted in other sections of this report) is also reflected in the college's enrollments in this field. In the 1964–65 school year, only three of the six students in the combined home economics and agriculture division were actually majoring in agriculture. Assuming the noted ratio in that division holds, only six persons (both full and part time) are enrolled as agriculture majors at the start of the current school year. Past enrollment figures indicate that this lack of enthusiasm for formal training in agriculture is of long standing. It would seem that the projected school of agriculture and the contemplated sharp increase in personnel requirements for agriculture, mentioned in the college's 5-year plan and faculty handbook, were overly optimistic.

This is not to suggest that there is no place in college for agriculture. The college must lead as well as follow, and the considerable budget expended on the programs of the Department of Agriculture as well as public statements by executive and legislative members of the government of Guam point out the official concern in this area. However, despite the large outlays and official concern, there has been no great increase in the extensiveness of farming on the island. It is probable that substantial growth of interest and participation in agriculture at the college will depend largely upon its success in offering its programs to wider geographical areas where the science and technology of American agriculture may benefit an existing interest or dependence on that industry.

3. FACULTY

In recruiting and retaining its instructional staff, the college faces much the same problem as the public schools. Table 8 indicates the COG experience levels of the contract hire instructional staff. The average COG experience was approximately 1.7 academic years, and the median experience was less than 1 year. The table also points up the high rate of staff turnover experienced by the college. Terminations accounted for approximately 25 to 35 percent of the total contract staff for the indicated years.

TABLE 8.—*Academic years spent on Guam by College of Guam staff*

	1965	1964	1963	1962	1961	1960	1959	1958	1957	1956	1955	Total	Median number of years	Average number of years
Professor	2				1				1	1		5	6	5.0
Associate professor	4	2							1			7	0	1.0
Assistant professor	2	5	1	3	1							12	1	1.7
Instructor	4	7	1									12	1	0.7
Vice president			1									1	2	2.0
Total	12	14	3		2				2	1		37	1	1.7

Source: Department of Labor and Personnel Files, September 1965.

In a sense, the recruitment and retention problem at the college is more difficult than noted previously for the public schools since the solution cannot be gained internally to Guam. In time the college's output may alleviate (if not solve) the public school teacher problem, but it cannot educate its own staff. It must depend upon the U.S. mainland and perhaps upon foreign sources for its professors.

If the college is to succeed in its more ambitious programs—indeed, if it is to become a first-class liberal arts college—something must be done to stabilize the constituency of its academic staff. The most straightforward method is to increase salaries to a level sufficient to attract good people and, once they are hired, to offer the kinds of working conditions (including tenure) that will encourage the retention of a professorial core around which the college can develop.

A 2-year contract period is inherently wasteful. The new instructors (and many are relatively inexperienced) must spend time becoming acquainted with Guam, the college administrative procedures, and the student body—in short, "settling in" as with any other occupation. The time required for this process varies between individuals, but at any rate some nontrivial time is spent at less than optimal performance. Reduced performance can also be expected prior to departure of those instructors planning to leave. When the frequency of departure is considered together with the fact that the process begins anew with replacements, it is clear that the college cannot afford not to take remedial action.

It has been mentioned that benefits are also gained from the rotation of staff, that the college is able to attract adventuresome, capable people who might want to spend a short time on Guam. Of course, this is true, particularly in those cases where Guam offers advantages to research-oriented professors in fields such as anthropology, linguistics, and marine biology. Yet it must be argued that a core of continuing academic staff must be developed in each division and major subject area within divisions if the programs, institutes, and centers predicted for the college's future are to develop. Admittedly the problem of tenure for COG is a difficult one, and we would not attempt to develop a system here. If and when it is developed, however, the system should reflect the goals and philosophy of the college administration and its board of regents. And it should be recognized that the present arrangement grants a kind of tenure, without regard to merit, on the basis of origin and therefore de facto by race. This is not the type of tenure system in keeping with a publicly supported college.

The College of Guam relies heavily upon part-time instructors. This is to expected in view of its staffing difficulties. Approximately 45 percent of the instructional staff were part-time employees at the beginning of the current school year, and the unexectedly high enrollment forced an appeal for additional part-time staff from the local population.

College-level instructors are currently enjoying a seller's market for their services. Considering COG's modest salaries, it is surprising that the college

is able to recruit a major portion of its necessary contract staff each year. In table 9, the 1964 mean salary of COG personnel by academic rank is compared with salaries of public liberal arts college personnel in the United States. Also noted for each rank is the salary advantage of all U.S. personnel. Note that COG's competive position becomes poorer in the upper ranks.

TABLE 9.—*Comparison of 1964 mean salaries, College of Guam and U.S. college personnel*

	Instructor	Assistant professor	Associate professor	Full professor
College of Guam	$6,141	$6,926	$7,696	$9,122
Total, United States	$6,386	$7,530	$8,905	$11,165
Percent difference	4	8.8	15.7	22.4

Source: Statistical Abstract of the United States, 1965, p. 131.

4. ENROLLMENT

The regular session student enrollment of the college over the years is presented in table 10. The data are computed to answer the question, "How many students attend the College of Guam?" Although the pattern is erratic, the college has experienced considerable growth of the student body during the past decade. Total enrollment is still heavily influenced by part-time enrollment, but the number of full-time students has been increasing at a much greater rate. Over the past 5 years, total enrollment has increased 44 percent, while full-time and part-time enrollments have increased 94 percent and 16 percent, respectively. It is interesting to note that although the number of students applying for admission was unexpectedly high this year, the actual enrollment of both full- and part-time students is less than the previous year. Non-U.S. citizens accounted for approximately 16 percent of current enrollment. The breakdown of these students is as follows:

Trust territory	156
Philippines	34
Africa	1
Chi Chi Jina	2
Hong Kong	1
England	1

If (as assumed) most of the trust territory students are attending college full time, they comprise up to 26 percent of that category.

TABLE 10.—*Average annual student enrollment, College of Guam*

Year	Full time			Part time			Total		
	Average number enrolled	Percent increase over previous year		Average number enrolled	Percent increase over previous year		Average number enrolled	Percent increase over previous year	
1955	87			225			228		
1956	108	89.0		345	53.0		453	60.0	
1957	121	12.0		330	−4.4		451		
1958	132	9.0	92	332	.6	68	464	2.8	74
1959	126	−4.6		361	8.7		487	4.9	
1960	208	65.0		579	60.3		787	61.6	
1961	301	44.0		516	−11.0		817	3.8	
1962	326	8.2		443	−14.2		769	−6.0	
1963	299	−8.3	94	418	−5.7	16	717	−6.8	44
1964	431	44.0		527	26.0		958	33.6	
1965	585	35.0		599	13.6		1,184	12.3	

NOTE.—Enrollment figures obtained by averaging the number of students in attendance each year. Summer sessions (also terms or trimesters) were not included in the averaging. Their inclusion would lower the average attendance considerably. Data for 1965-66 school year reflect initial enrollment. Assuming attrition rates of the past few years, enrollment for 1965-66 school year will approximate 508 full time, 520 part time, 1,030 total students. Off-campus extension enrollment is not included above.

5. THE STUDENT BODY

The student body is an extremely heterogeneous group in terms of cultural and academic backgrounds. Three major groups are (and will continue to be) important to the college: (1) Mainland (stateside) students who are graduates of U.S. or Guam high schools or transfers from U.S. colleges; (2) Guamanians (also with varied backgrounds but drawn mainly from Guam's secondary schools); and (3) Trust Territory students. In a previous section, it was noted that high school graduates are less qualified academically than their mainland counterparts because of the bilingual problem and past deficiencies in the public school system. It follows directly, then, that the entering students exhibit substantial deficiences that the college must attempt to remedy, and this has indeed been the case. A large proportion of the student body is required to take remedial courses. As would be expected, the most prevalent weakness is in English, and the English Language Institute has enrolled up to 50 percent of the student body for the purpose of developing communication which would be sufficient to permit college-level work. Also serving to strengthen student education is the rather extensive number (over 50 hours) of required courses in general education.

While the graduates of Guam's public schools will probably continue to exhibit academic deficiencies for some time, the improvements of the past few years, together with the current emphasis upon upgrading the entire educational system, should produce adequately prepared students in 5 or 6 years.

Students presenting the greatest problems at the present time are the highly motivated but comparatively poorly prepared trust territory students. In terms of offering western-type education, trust territory schools are in no way comparable to those on Guam, and the solution to this problem is nowhere in sight. Even without the proposed expansion to a regional college, COG will undoubtedly continue to offer precollege and remedial programs on a large scale. In fact, without programs of this type, the expansion plans so often foreseen for COG cannot occur.

Off-island students often find themselves in social and emotional difficulties which further disrupt their education. In agreement with the trust territory office, the College of Guam has appointed a full-time counselor to work with this group. Apparently, in the past, trust territory students have returned with attitudes and behaviors unacceptable to fellow residents of their home islands. This purportedly disruptive influence has been used to argue for the creation of a new college for the trust territories.[29] On the other hand, COG offers a real advantage to trust territory and other Western Pacific area students as a sort of "half-way house" where they may gain the advantages of a U.S. college education without the severe, potentially overwhelming emotional impact they would undergo in mainland schools.

6. ENROLLMENT PROJECTIONS

The College of Guam staff was surprised by a very high number of student applications at the beginning of the current school year. The unexpected level of applications points out the difficulty in accurately predicting enrollment over a period of years. The difficulty of projecting Guam's public school enrollment because of large, mobile Federal and military components with changing age level characteristics was discussed previously. These population components also affect COG's enrollment, although to a lesser extent. A variety of other factors (such as local economic conditions, selective service regulations, the rise or fall of the college's prestige) all will affect COG's enrollment more or less unpredictably over the years. The college itself can influence enrollment by changing admission standards, tuition and fees, number and value of grants and scholarships, and the like. In addition, the college can, as a matter of policy, control the number of non-U.S. citizens enrolled.

The 5-year plan of the College of Guam had projected an entering freshman class (based on Guam high school graduations) of 381 for the 1966–67 school year. Yet admission applications totaled 747 for the 1965–67 school year. A review of applicant characteristics disclosed that 368 were 1965 high school graduates (quite in keeping with the 5-year plan's estimate of 40 percent of high school graduates). Of this group, only 222 actually enrolled, however, and it is assumed that their applications were deferred or rejected on the basis of admission standards. The more surprising element was the large number of pre-1965 graduates (196) and transfers (183). The reasons for the new or renewed interest in college of these groups are not clear, but in many cases COG's recently acquired accredi-

[29] Report of the United Nations Visiting Mission to the Trust Territory of the Pacific Islands, 1964.

tation was responsible. The considerable economic savings compared to a stateside education, together with the accreditation, undoubtedly influenced many Guamanian parents. In all likelihood, the college has experienced, most, if not all of the enrollment surge to be expected from this group, and a normative approach to enrollment projection can be resumed.

A most perplexing problem in attempting to project future college enrollment is the large number of part-time students. If on-campus enrollment consisted entirely of full-time students, projections would be straightforward and relatively simple. Empirical attrition rates could be applied to successive classes and the projected freshman class increment added to form the basis for a core enrollment. Special classes of students with more or less controlled enrollment (e.g., trust territory students, those in new programs such as nurses' training, and graduate students) would be added, and a generally accurate enrollment projection would result.

The college life span of part-time students varies almost on an individual basis. Students entering the college with limited academic goals (taking a course in accounting or real estate, for example) may decide to take other courses. Conversely, while it seems unlikely, it is within the realm of possibility that substantial numbers of students will complete their self- or career-improvement courses and drop out of college. As the number of degree-seeking students (996) far exceeds the full-time enrollment, it is obvious that large numbers of part-time students are stretching out their education while working for a degree.

A definite need exists for a thorough study of the part-time student population of the College of Guam if adequate projections are to be made. While the study would yield immediate benefits, its major gain for the college would be through longitudinal data in which trends could be established and experiential data accumulated that may be extrapolated to future part-time student populations. Some trends are noticeable now. There has been a relatively constant decrease in part-time students over the past 6 years. (This trend is indicated below.) The more significant data (such as the mean and range of units carried by academic department, future plans, attrition rates, etc.) await a more thorough and ongoing study.

School year:	*Percent part time*
1960	74
1961	63
1962	57
1963	58
1964	55
1965	50

The college's 5-year plan does not take account of this trend. Instead, it projects part-time students at a constant rate of increase of 20 percent. Similarly, the full-time students were shown to increase at a constant rate of 30 percent; as a result of the higher rate, the number of full-time students surpasses part-time in 1969–70.

Another major element of the projection involves increasing the number of Andersen Air Force Base students linearly from 333 in 1966–67 to 460 in 1970–71. Student totals are indicated for each year, and the number of full-time equivalent students is computed by applying a 40-percent factor to the part-time components. In all, enrollment is seen to increase at an annual rate of about 25 percent.

It is likely that this projected enrollment has been overestimated. In the discussion of population characteristics (see app. 1), it was noted that a "baby boom" occurred on Guam after the war (1945–50) that has continued with a slight increase in rate to the present. Assuming that an entering freshman will average about 18 years of age, these postwar babies should have begun to reach college age in 1964. Referring back to appendix 1, it can be seen that this is what, in fact, has occurred. As the birthrate increased only slightly subsequent to the 1945–50 population cohort, enrollments drawn from all classes of the Guamanian population will tend to level off and increase more slowly than the past 2 years would indicate.

Table 11 presents a projection of enrollment candidates based on current enrollment in the private and public schools of Guam. The overall annual growth rate reflected in these projections is about 6 percent. Total enrollment projections have not been developed due to the uncertainty regarding the part-time student population.

TABLE 11.—*Projected College of Guam enrollment candidates based on Guam high school graduates*

	Number entering 12th grade public high school [1]	Number graduating public high school [2]	Private school graduates [3]	Total high school graduates	College of Guam enrollment candidates [4]
Year:					
1964	690	649	167	816	
1965	824	774	170	944	378
1966	750	705	174	879	364
1967	811	762	178	940	401
1968	818	769	180	949	418
1969	918	863	184	1,047	475
1970	959	901	188	1,089	510
1971	950	893	192	1,085	522
1972	952	895	196	1,091	530

[1] Basic public school population by grade level derived from department of education, statistical report, school year 1964–65, pupil personnel-data processing office. Assumes relatively stable progression to 10th grade, 90 percent of 10th graders progress to 11th grade, and 80 percent of 11th graders progress to 12th grade.
[2] Assumes 94 percent of 12th grade class graduates from high school.
[3] Department of land management, projection of Guam school population (draft), date unknown. Assumes 25 percent of senior high school enrollment in 12th grade, 94 percent graduating.
[4] Based upon percentage of high school graduates likely to seek enrollment in college. Allocation to college population starts at 40 percent (1965) and increases linearly to 49.4 percent (1972). Approximately 52 percent of mainland high school graduates entered college in 1964.

The problem of enrollment projections has been emphasized here as it affects the college's short-term operations and long-term plans. The college is forced to recruit instructional staff on an annual basis. Planning for this procurement must take place well in advance of the school year for which the staff is required. In addition to knowing the expected attrition of current staff, some reasonable estimate of the student population is necessary for efficient recruitment. Under present circumstances, there is little likelihood of overstaffing instructional personnel; but understaffing could very well develop if the part-time population attrition were less than expected. Long-range building plans and the development of new educational programs also require realistic enrollment projections.

7. DEVELOPMENT PLANS

The WCA accreditation report mildly criticized the generality of the statements of COG's goals and said that these were not to be "confused with specific functions realistically determined." It specifically pointed out the omission of teacher education, which it considered to be one of COG's most important considerations. Furthermore, the plans for master's degree programs in educational administration and biology were considered to be unrealistic and the WCA strongly urged that such plans be deferred until the college had unquestioned strength in its attempted undergraduate curriculums.

The statement of goals and the plans for the future incorporated in the 5-year plan meet these objections squarely. In addition to emphasizing its commitment to teacher training, the need was stated for a retrenchment and a redefinition of goals. Other important requirements discussed in the plan were the following:

(*a*) Elimination of part-time faculty and upgrading requirements of full-time faculty.

(*b*) Elimination of AA degrees in education.

(*c*) Reorientation of extension programs from an interest basis to a degree-oriented program similar to "bootstrap."

(*d*) Supplementation of liberal arts orientation with community service programs if funds and personnel are made available by the community.

Difficulties of acquiring staff under the present contract hire, no tenure basis were discussed previously. Since gaining unquestioned strength in curriculum depends largely upon acquiring and retaining a more or less permanent core staff, the solution to this problem should have highest priority with the board of regents. The programed elimination of the AA degree in education is essentially complete.

The development of a vocational and technical college program is currently the main channel through which the college is attempting to expand. The president of the college has pointed out the need for post high school technical and vocational training on Guam and has expressed the college's willingness to develop

such a program. (This has been discussed previously in the section dealing with the need for an expanded trade and technical school.)

The College of Guam possesses a unique position among U.S. institutions of higher learning and, like Guam itself, one of its greatest assets is its location. Already it has influenced the course of the Western Pacific area through the trust territory students who will be the teachers and leaders in their home areas in the years to come. The new programs to increase the educational level of trust territory residents will create an even greater interest in the college. In fact, the limiting factor on trust territory enrollment in the future will probably be college policy.

The success in attracting these students, coupled with general acceptance by the Guam community, has created a feeling of optimism and expansionism among college officials and other leading citizens of Guam. Since the appeal of an American education is very great, there seems little doubt that a first-rate college (perhaps with an international staff) would draw students from Western Pacific areas in addition to the trust territory. Such an occurrence would provide many benefits to Guam—not the least of which are recognition, prestige, and almost certain added tourist appeal.

Despite its attractiveness (and it should certainly be a goal of the college), this line of development probably lies far in the future. The college is spread quite thinly in several academic areas, and a general strengthening of the present baccalaureate program is needed before a significant expansion is attempted. A University of the Western Pacific or a Pacific education center would require a strong administrative staff with operational and financial freedoms much greater than those now granted. Considerable autonomy would be a definite requirement for such a staff; even the Guam Memorial Hospital model would probably be insufficient.

Finally, any such program would be expensive, and additional money for education is always difficult to obtain on Guam—especially since many of the profits would be intangible. Since the prepared expansion programs may be considered to complement and serve national goals in the Western Pacific, Federal funding might be obtained to offset much of the cost. Solutions to the other problems, however, would still be required.

APPENDIX 6—LOCAL INCENTIVES TO INVESTMENT

Prior to the enactment of Guam Public Law 8-80 in August 1965, formal government inducements and subsidies designed to encourage new businesses were limited to the credit facilities of the Guam Finance & Development Corp. and the tax subsidy provisions of the Tax Incentive Act (August 1964).

A. Guam Finance & Development Corp.

The Guam Finance & Development Corp., established in July 1963, was successor to the Guam Finance and Development Administration. The latter agency was founded in 1952—

(1) "to augment the credit facilities available for the betterment of the conduct of agricultural, industrial, commercial, construction, housing and related pursuits" by means of insuring or guaranteeing the repayment of loans made by other public or private lending agencies, and by making direct loans to borrowers in cases where adequate financing was not available from other lenders even with such guarantee; and

(2) "to examine, investigate and conduct research and experimental operations in agricultural, industrial, commercial, housing and related pursuits, including but not limited to the marketing, distribution, growth, advertising and exporting aspects of such pursuits on Guam, and publicize the results of such activities."

The act establishing the Development Corp. broadened these objectives and powers greatly. The purpose of the corporation was stated simply: "to promote the general welfare * * * through the economic development of Guam." Authorized activities included research and lending functions similar to those of the administration (above) and a number of others as well:

(1) "to encourage and promote the investment of private capital in industrial, agricultural, fishing, commercial, or related enterprises, undertakings, or activities in Guam. Insofar as may be possible without jeopardizing the maximum development of the industrial, agricultural, commercial, and related resources of Guam for the public good, the Corporation shall formulate its policies so as to encourage and promote the investment of capital owned by residents of Guam;

(2) "to engage in land-use planning to the end that the most economic and socially beneficial use may be made of the soil of Guam, and to encourage and assist private persons and organizations to act in accordance with the results of such planning;

(3) "to encourage and engage in the business of providing, whenever adequate facilities are not otherwise available, transportation for persons and property between Guam and to and from the islands of the United States Trust Territory of the Pacific;

(4) "to encourage the establishment and development of small farms and small communities in Guam, and, for that purpose, to construct, equip, improve, and supervise such small farms or communities and to give other assistance to them;

(5) "to make loans to any person for the establishment, maintenance, operation, construction, reconstruction, repair, improvement, or enlargement of any industrial, commercial, agricultural, fishing, or related enterprise, undertaking, or activity in Guam whenever such loans are not available from private sources * * *;

(6) "to establish, maintain, operate, and engage in, upon its own account, any appropriate enterprise, undertaking, or activity for the development of the industrial, commercial, mining, agricultural, livestock, fishery, or forestry resources of Guam;

(7) "to encourage and engage in low-cost housing activities, including development of residential subdivisions, construction of housing for rental

or resale, and to make loans to any person for the purchase, construction, improvement or repair of a home."

Additional powers were also granted, including the following:

(1) "to determine the character of and the necessity for its obligations and expenditures and the manner in which they shall be incurred, allowed, and paid, subject to the laws applicable specifically to Government corporations;

(2) "to acquire, in any lawful manner, any property—real, personal, or mixed, tangible or intangible—to hold, maintain, use, and operate the same; and to sell, lease, or otherwise dispose of the same, whenever any of the foregoing transactions are deemed necessary or appropriate * * *;

(3) "to enter into and perform such contracts, leases, cooperative agreements, or other transactions with any agency or instrumentality of the United States, or with any State, Territory, or possession, or with any political subdivision thereof, or with any person, firm, association, or corporation, as may be deemed necessary or appropriate to the conduct of the activities authorized by this Chapter * * *;

(4) "to settle and adjust claims held by it against other persons or parties and by other persons or parties against the Corporation;

(5) "to borrow funds required to finance revenue producing projects, and to dedicate revenue derived therefrom to the repayment of such loans."

Despite this very considerable expansion of scope and authority, the corporation's activities did not differ significantly from those of its predecessor. It was the credit function that dominated the operations of both over the years. The administration had originally been required by law to reserve a substantial part of its loan fund for agricultural loans, and in 1957 an additional larger portion of the fund was set aside for low-cost housing loans. The corporation was not required to set aside specific amounts, but the shift of emphasis from agriculture to housing continued. During 1952–64, 590 loans were made by both entities, of which 250 were agricultural, 295 were for low-cost housing, 24 were industrial, and 21 commercial. Only 43 of the agricultural loans were made in 1959–64, but 258 of the housing loans were made in the same period (particularly post-Karen).

Some of the industrial loans were directed toward enterprises that would augment Guam's economic base—offshore fishing to supply the local market, trochus production, and manufacture of a prepared food product for export (heart of palm lumpia). So far as is known, none of these enterprises succeeded. The commercial loans were for various local service purposes, including retail stores and consumer service establishments, commercial building construction, the post office building, a small air service and a small charter bus service, a heavy equipment service, etc. The focus on local service and housing rather than basic activities would certainly appear to have been justified during most of the period prior to 1965. But it cannot be said that any significant basis of experience had been accumulated in the attraction of new industry, entrepreneurship, and investment.

By 1965, contributions from the general fund had brought the corporation's special revolving fund to a value of more than $2.5 million. Outstanding loans receivable as of mid-1965 were distributed as follows:

	Number	Amount
Low-cost housing	260	$2,089,513
Agricultural	24	193,611
Commercial	11	438,670
Industrial	4	19,086
Housing and construction	8	84,563
Total	307	2,825,844

With the passage of Public Law 8–80, creating the Guam Economic Development Authority in August 1965, these and other assets of the Guam Finance and Development Corporation were transferred to the newly established Guam Housing Corporation for use solely in low-cost housing activities.

B. Tax Incentive Act

This act, approved in August 1964, had the specific objective of promoting economic development by offering income tax rebates or subsidies to "such industrial and business activities as are determined will stimulate the economic development of the territory, but the establishment or expansion of which require such governmental assistance." Certain types of enterprise making specified minimum investments were to be offered a nontaxable subsidy equal to 75 percent of the income taxes paid to the government of Guam for 10 years. A similar subsidy or rebate was to be paid to stockholders of such corporations on the income tax paid to the government of Guam on income derived from the dividends of the corporations, provided that the stockholders were bona fide residents of Guam throughout the taxable year. In the year during which the Tax Incentive Act was on the books, no certificate of subsidy were issued.

Like the Guam Finance and Development Corporation, the Tax Incentive Act was eliminated by the Guam Economic Development Act in August 1965.

C. Guam Economic Development Authority

A continual extension of the purposes, authorized activities, and powers of instrumentalities responsible for economic development is evident in the foregoing descriptions. The act creating the Guam Economic Development Authority continued the trend. It adopted the major kinds of provision embodied in both the development corporation (except for housing) and Tax Incentive Acts, added others, and combined them all in one agency. At present, therefore, all the formal inducements that the government of Guam can offer to new industries are embodied in the Guam Economic Development Authority, which has perhaps greater formal scope and power than any other comparable organization known to the authors.

The stated purpose of the authority is to act as a "public corporation for the centralized direction, control, and supervision of an integrated program for the economic development of Guam * * * to be catalyst in * * * economic development * * * at the same time that it shall aid private capital without competing with it." To this end, it is authorized to "plan, initiate, organize, control, and direct an integrated program to attract, promote, encourage, and develop desirable commerce, agriculture, industry, and tourism in the territory."

Authorized activities and powers additional to those of the predecessor finance and development corporation include the following:

(1) "to issue, sell or dispose of revenue bonds and other obligations from time to time under such terms and conditions as the Guam Legislature, by appropriate legislation may prescribe. The proceeds of such bonds and obligations shall be used solely to finance specifically authorized corporate programs;

(2) "to invest its funds in any enterprise, undertaking or other activity, which in its judgment, will further the development of desirable agriculture, industry and commerce, and of tourism in this territory;

(3) "to form or cause to be formed, to promote, to aid and to invest in any manner within its means in the promotion of any corporation or other association, and to cause or participate in the merger, consolidation, reorganization, liquidation or dissolution of any corporation or association in which, or in the business or welfare of which the corporation shall have direct or indirect interest;

(4) "to submit to the Legislature, through the Governor of Guam, from time to time such legislation as it deems necessary to expeditiously and effectively foster desirable industry, commerce and tourism in this territory; and

(5) "to endorse, guarantee and secure the payment and satisfaction of bonds, coupons, mortgages, deeds of trust, debentures, obligations, evidences of indebtedness and shares of stock of other corporations, as far as and to the extent that the same is necessary and appropriate to carry out the Corporation's authorized and permissible activities under its powers and functions."

In addition, the corporation is empowered to recommend to the Governor of Guam the issuance, modification, revocation and suspension of qualifying certificates for tax rebates or abatements to eligible enterprises. Here also, the authority is given additional scope: the tax subsidy provisions of the former Tax Incentive Act are extended from (*a*) 75 percent of income taxes only for 10 years to (*b*) 100 percent for periods up to 10 years on any of the following local taxes:

alcoholic beverages; liquid fuel; real property; income from lease of land, buildings, machinery and equipment to tax-exempt businesses; corporate income; and income from dividends (maximum of 5 years). The taxpayer is also given the option of 50 percent tax abatements or rebates for double the originally authorized term.

The authority received an initial appropriation of $100,000 for its operating fund through June 1966 but no appropriation for its capital fund. Funding for the authority will be available, apparently, only from direct appropriations, from the sale of revenue bonds or other obligations specifically prescribed by the legislature, and from borrowing on its own initiative. As a practical matter, the first two sources are under the direct control of the legislature, and the credit of the authority (at least initially) will presumably also depend upon collateral in the form of funds or other assets provided by the legislature. Despite the loose, almost casual, delegation of extremely broad powers to the authority, therefore, its activities would appear to be subject to considerable control via the government purse strings.

D. Appraisal

Increasingly great powers have been granted to public development corporations in Guam, even when the substantial powers already granted were not being utilized. It is perhaps academic to point out that extension of institutional forms will not by itself promote development, because the legal framework for such promotion already appears to have been extended to the limit of any reasonable delegation of government functions, powers, and prerogatives. The problem now, therefore, is one of substance or content—making intelligent and effective use of the devices that have been provided while avoiding abuses and serious errors.

The devices available are of three main kinds: (1) credit facilities and other forms of direct financial assistance to investors; (2) undertakings by the authority itself in the absence of private entrepreneurship for projects considered necessary or desirable; and (3) tax abatement.

Direct financial assistance in the form of loans and loan participation is the area in which past efforts have been concentrated; but it should be noted that very little of this activity has involved the establishment of new basic enterprises, the scale has been small, and the results obtained have not been encouraging. This should not rule out the use of loans and other forms of direct financing in the future, but there are grounds for suggesting that such facilities should be provided sparingly. First, Guam is a capital-short area, and the aim must be to attract outside capital and retain local capital rather than to use government cash and credit resources as a source of investment funds. Second, off-island businesses likely to be interested in establishing export industries in Guam are generally capable of providing their own capital from off-island sources. Those who are not will, in many cases, be marginal operators whose presence may not be particularly desirable in any case. Third, the experience of public development corporations elsewhere indicates that even the opportunity to borrow on favorable terms is not a significant factor compared with the inherent characteristics and risks of the investment project itself. All this suggests that direct participation in the financing of private investments should be restricted so far as possible to "leverage" activities such as loan guarantees and partial participation, and then only in selected instances (e.g., an industrial park or a resort hotel where the market is uncertain but the "experiment" must be made).

The same considerations apply with even greater force in the case of enterprises initiated by the authority on its own account, because this will presumably be done only with higher risk ventures where private participation is initially unavailable; hence the authority's share of the financing will be larger than in the preceding case. Moreover, the authority would also be supplying entrepreneurship and management, and these are scarce resources. Therefore, it is assumed that functions other than tax abatement will be approached with great caution.

Tax subsidies are likely to be a powerful inducement to potential investors. Note, however, that an enterprise must offer a good chance of making significant profits before an income tax rebate becomes meaningful. Businesses in the United States have shown some sensitivity to other kinds of tax abatement but here again the prospect of lower real estate taxes or other local taxes is not frequently the overriding factor in a location decision. Tax subsidies may be essential in tipping the scales in favor for Guam for some investors, but it is likely that in other instances substantial subsidies will be granted to firms which would have found it advantageous to locate in Guam with smaller inducements or none at all. This is partly because many of the investment opportunities in

Guam are peculiar to it as a result of the U.S. tariff preference and would not be available elsewhere except perhaps in another U.S. territory. A firm that can foresee profitable operation in Guam may not need a full income tax rebate for 10 years to induce it to invest; yet it will certainly bargain in the hope of obtaining it, especially if other firms are already receiving it. In this connection, there would also appear to be a real hazard of one territory being played against another by potential investors. A more general kind of risk is represented by firms making relatively small initial investments who might operate tax free up to 10 years, then liquidate or threaten to do so in the hope of obtaining further subsidies. If such a firm does depart and a successor is found, the latter would also presumably expect similar tax treatment.

These and similar risks appear to be inherent in tax rebate and abatement schemes. It is unlikely that sufficient discrimination in bargaining will be possible to avoid the chance of "giving away" too much in specific cases. It is even probable that bargaining over subsidy periods will interfere sufficiently with promotion efforts to make it impracticable. The most likely outcome is uniformly liberal tax subsidy treatment for a period of years until the effectiveness of the device can be gaged and appropriate adjustments in the policies made on the basis of experience.

Finally, however, it should be observed that tax inducements will necessarily be constrained—later if not initially—by the fact that new industry is not costless to the community, but will necessitate increased government expenditures for various infrastructure and public service facilities. These cannot be forecast, but they will surely occur and they will eventually place a limit upon the extent to which tax subsidies can be granted at the expense of the taxpaying portion of the community. At some point it will become necessary to attempt serious appraisal of how much each additional job is worth to the community in terms of its cost in subsidies. This, however, must await the accumulation of experience. The important task for the next 3 or 4 years will be to accept the hazards and establish a nucleus of basic industry to demonstrate the feasibility of investment in Guam to subsequent investors.

61-092—66—15

APPENDIX 7—LOCAL GOVERNMENT REQUIREMENTS AND RESOURCES

Intensified efforts in the areas of industrial development, tourism and education, along the lines recommended in this report, will add to the already substantial burdens of government in Guam. Continuous attention to the scope and cost of both regular and developmental functions will be necessary if both types of requirements are to be met with the fiscal and managerial resources likely to be available to the government. Here we examine current government functions and fiscal patterns in order to arrive at some rough indications of future requirements and capabilities.

A. Government Organization

The government of Guam is a complex and unique organization. Among its activities are some that elsewhere would be carried on by State, county, or municipal governments, special districts, private enterprise, and even the Federal Government. Yet all local authority and responsibility is vested in a single executive and a single legislative body. For purposes of planning and effective government action, this arrangement should have strong advantages over the typical situation in the mainland, where numerous competing jurisdictions may be present within the same community and where community programs may be subject to interference from actions taken in other nearby communities. Organizational unity is not a substitute for singleness of purpose but, given the latter, the government of Guam would be potentially capable of planning and implementing its programs with considerable efficiency by virtue of the former.

The Organic Act of 1950 created a civilian unicameral legislature of not more than 21 members with full legislative powers and also provided for the appointment of the Governor and the Secretary of Guam by the President of the United States. The Governor, as chief executive, appoints all department executives with the consent of the legislature. A unique feature of Guam's governmental structure is the commissioner system, with an elected commissioner for each village and a Chief Commissioner appointed by the Governor with the consent of the legislature. The Commissioners function as a staff office to the Governor, in addition to the Governor's own staff and the passport office. Three of the 11 executive departments (finance, law, and labor and personnel) are staff departments. The other eight are line departments (agriculture, commerce, education, land management, Guam Memorial Hospital, public safety, public works, and public health and welfare), but the departments of commerce and land management both perform major staff functions as well. There are four special agencies: the commercial port, the College of Guam, the public library and museum, and the public utility agency. Several boards and commissions (such as Board of Equalization, Cockpit Licensing Board, Board of Engineering and Architectural Examiners, Alcoholic Beverage Control Board, and Land Transfer Board) assist in the enforcement of regulatory measures. The Guam Economic Development Authority and the Guam Housing Corporation complete the executive branch.

B. Operating Expenditures and Employment by Function

The commercial port and the public utilities agency are largely self-supporting and are conducted as separate enterprises outside the government of Guam general fund. Their importance may be gaged from the following figures.

	Commercial port	Public utility agency
Regular employment:		
Actual, Jan. 1, 1965	91	207
Authorized, 1965	101	244
Temporary employment, actual, Jan. 1, 1965	1,427	1
Operating revenue, 1965	$2,383,836	$3,816,639
(Less utility services purchased)		$2,330,721
Operating expenses, 1965	$2,904,963	$1,724,703

The Guam Finance and Development Corporation also operated under separate funding and, like the port and utility agency, is not covered by general fund operating expenditures except in the case of contributions from the general fund.

General fund operating expenditures (including encumbrances) increased from $11,297,000 in fiscal 1960 to $17,685,000 in fiscal 1965. Per capita government expenditures and revenues are difficult to establish for Guam because the substantial population on military bases generates some additional government costs as well as revenue. This factor is taken into account here by arbitrarily adding 5,000 to the estimated population residing in the civilian community for purposes of per capita calculations. On this basis, general fund operating expenditures per capita are estimated at about $232 in fiscal 1960 and $332 in fiscal 1965. Figures for mainland areas in 1964–65 are not available, but average per capita costs of State and local government in the United States for 1963–64 on a comparable basis are estimated at about $267.

Table 1 extends the comparison to specific functions. Operation of public schools cost about $97 per capita [1] in Guam as against a U.S. average of $91. Travel and transportation costs are high for the Guam school system due to the high turnover of teachers and the heavy costs of moving contract teachers from the mainland. Excluding transportation, the expenditure was about $89. However, this does not express the full cost because the department of public works pays the cost of operating schoolbuses and much of the cost of school maintenance. Salaries of 56 full-time busdrivers alone cost $217,000 in 1964–65, and another $232,000 was paid to the Air Force and Navy for school bus services which they provided. The total of these additional costs allocable to the education function is not known to us, but a figure of at least $600,000, or perhaps $11 per capita, would seem a conservative estimate. Even excluding transportation costs, therefore, Guam's per capita operating expenditures on public education were in the neighborhood of $100. Expenditures on higher and other education, in contrast, were well below the U.S. average.

TABLE 1.—*Per capita government operating expenditures for selected functions, Guam (1964–65) and the United States (1963–64)*

	Travel	Other	Total	U.S. average	High State	Low State
Local schools	$8.30	$88.50	$96.80	$90.71	[1] $123.22	[2] $56.98
Higher education and other	1.70	13.50	15.20	24.05		
Total education	10.00	102.00	112.00	114.76		
Highways		4.90	4.90	19.36	[1] 63.64	[3] 12.23
Public welfare	.10	8.40	8.50	[4] 30.14	[4] 64.28	[5] 11.75
Health and hospitals	1.20	52.10	53.30	23.47	[7] 42.31	[5] 10.13
Public safety		20.20	20.20	[4] 23.25		
Financial administration	.30	20.60	20.90	[4] 6.16	[2] 14.46	[2] 3.47
General control [10]	1.90	24.60	26.40	[4] 7.24	[1] 23.68	[5] 3.19
Subtotal	13.40	232.80	246.20	224.48		
Other [11]	.80	73.00	73.80	42.14		
Total [12]	14.20	305.80	320.00	266.62		

[1] Alaska.
[2] Arkansas.
[3] South Carolina.
[4] Includes capital outlays, presumably minor.
[5] Oklahoma.
[6] Virginia.
[7] New York.
[8] South Dakota.
[9] Mississippi.
[10] Estimate for Guam includes Governor's office less passport office, commissioners; judiciary; legislature, including Washington representative; department of law; department of labor and personnel; department of commerce less port security; and one-half of the department of land management.
[11] For Guam, includes all other general fund operating expenditures except $1.60 per capita for passport office and port security. For United States, includes all other general operating expenditures except air and water terminals, sewers, and interest on debt. (Also excludes utility expenditures, liquor store expenditures, and insurance trust expenditures for benefit payments or refunds, but includes government contributions to employee retirement systems for government employees.)
[12] Includes all general operating expenditures except as excluded in 2 above.

Sources: Government of Guam financial statements (preliminary), July 1, 1964, through June 30, 1965; U.S. Department of Commerce, Bureau of the Census, "Governmental Finances in 1963–64" (series G–GF64 No. 1), 1965.

[1] This includes MDTA and Headstart costs but excludes vocational rehabilitation, the latter being classified in table 1 as "other."

Also far below U.S. average per capita costs—and the minimum for any single State as well—were Guam's per capita costs for highways and public welfare programs. Both of these categories are likely to become more costly in the future. Public safety (police, fire, and correction) similarly is somewhat less expensive in Guam than it is, on the average, in the mainland—but it should be, since the highest costs for public safety occur in large metropolitan areas.

The functions so far enumerated add to about $146 per capita for Guam and, $188 for the U.S. average. The costs of the remaining comparable functions however, amount to $174 for Guam as against $67 for the United States. Guam spends more on public health and hospitals than does any State, but this comes about partly as a result special conditions whereby public medical services rather than private have traditionally carried most of the health burden. For financial administration and general control (i.e., "pure" governmental functions), Guam's operating expenditures are also higher than those of any State. For each of the latter functions, Guam is spending more than three time the national per capita average.

"Other" expenditures shown in table 1 are also substantially higher in Guam than the U.S. average. Excluding contributions to government employee retirement funds (and, for Guam, a $250,000 contribution to the Guam Finance and Development Corporation fund as well), the comparison becomes $53.80 for Guam and $30.39 for the United States. If the previous estimate of $11 for "hidden" costs of education in Guam is also removed, the figure for Guam is reduced to $42.90. Of the latter amount, $28 is attributable to public works (excluding the $11 of public works expenditures assigned to education and the $4.90 assigned to highways), over $6 to agriculture, $2.60 to the portion of land management expenditures not assigned to general control, and $1.50 to the Guam Housing and Urban Renewal Agency.

Table 2 shows government of Guam regular employment by function as of July 1, 1965. Not included are employees of the commercial port, the utility agency, the Guam Finance and Development Corporation and the Guam Housing and Urban Renewal Agency, or temporary employees of any department. Total employment for the included functions amounted to 438 per 10,000 persons as compared with a U.S. average in October 1964 of 324 (full-time equivalent of full- and part-time employees). For the fiscal year, a figure of 460–470 for Guam would be more typical because employment in the department of education is at a low point at the end of the school year. The figures affirm the pattern already observed in operating expenditures, except that the contrasts between Guam and the U.S. average are somewhat more pronounced in the case of employment.

TABLE 2.—*Government employment per 10,000 population, by function, Guam (July 1965) and United States (October 1964)*

	Guam [1]	United States [2]
Local education	129.3	137.4
Higher and other education	13.1	24.3
Public health and welfare	20.7	12.6
Hospitals	64.4	35.1
Public safety	42.0	31.7
Financial administration	34.0	9.5
General control [3]	37.5	9.7
Other	97.5	61.5
Total	438.5	323.8

[1] Regular government employment as of July 1, 1965, excluding all employees of the commercial port, public utility agency, Guam Finance and Development Corporation, Guam Housing Urban Renewal Agency, and temporary employees of other departments. Also excludes 13 employees to take account of Passport Office and port security.

[2] Full-time equivalent employment, State and local governments. Excludes employment for utilities, air and water terminals, sewerage, liquor stores, and employment security administration.

[3] For Guam, excludes 13 employees to take account of Passport Office and port security, and one-half of Land Management employees.

Sources: Guam Department of Labor and Personnel, Monthly Employment Report, July 1, 1965; U.S. Bureau of the Census, State Distribution of Employment in 1964 (Series G-GE64-No. 1), March 1965.

C. Capital Outlays

Government of Guam expenditures on capital improvements and other continuing projects have shown no increase in the last 6 years (see table 3 for details):

1958–59	$3,063,000
1959–60	2,412,000
1960–61	1,915,000
1961–62	1,801,000
1962–63	1,152,000
1963–64	2,618,000
1964–65	1,914,000

However, this is somewhat misleading—at least for the period since 1962—because OEP typhoon reconstruction funds totaling $2,160,000 had been spent or encumbered by July 1, 1965, leaving an unencumbered balance of $890,000 from the OEP emergency allocations at that date. Major classes of expenditure were as follows:

Cleaning of debris	$314,931
Streets and utilities	925,422
Public buildings	168,767
Emergency shelter and temporary housing	202,805
School furniture and equipment	48,772
Other government furniture and equipment	287,745
Hospital and public health equipment and supplies	111,899
Other	99,801
Total	2,160,142

Major unencumbered balances remaining as of July 1, 1965, were:

Public school furniture and equipment	$510,228
Removal of temporary housing	135,455
Clearing of debris	108,813
Repair of power and telephone systems	74,169
Other	60,998
Total	889,653

Finally, the major capital improvement program under the rehabilitation law began to account for substantial outlays in 1964–65. Expenditures and encumbrances as of July 1, 1965, were as follows:

	Expenditures	Encumbrances
Public schools	$959,870	$5,742,755
College of Guam	203,136	679,314
Village development	5,650	401,350
Penitentiary and juvenile institutions	153,630	185,770
Other public buildings	178,023	830,707
Sewer system	397,548	3,211,054
Water	145,969	709,031
Power	1,717,641	207,359
Air terminal	73,770	776,230
Totals	3,835,234	12,803,571

Capital outlays for 1964–65 (excluding OEP assistance) thus totaled about $5,750,000. Expenditure of the remaining rehabilitation funds of about $41 million over the next 6–8 years would result in an average outlay of $5–$7 million per year. If regular capital expenditures for the government of Guam remain in the $2–$3 million range, total outlays will average $7–$10 million, or something like $140 per capital per year. The impact on government finances will, of course, be much less because only about $28.5 million of the rehabilitation funds will be subject to repayment, and this over a 30-year period.

TABLE 3.—*General fund capital improvements and other projects*

Purpose	1958–59	1959–60	1960–61	1961–62	1962–63	1963–64	1964–65
Hospital and health centers	$15,240	$130,454	$49,621	$27,976	$97,985	$13,675	$1,026
Schools	1,909,450	1,290,575	677,502	999,651	609,375	264,966	126,510
Other government buildings	429,541	372,459	282,814	55,673	3,629	66,775	5,957
Parks and playgrounds	76,129	54,741	86,153	52,522	30,854	40,268	209,535
Roads and bridges	234,234	62,591	277,726	430,160	162,671	287,388	224,492
Drainage and sewerage	2,729	488	100	2,240	2,489	2,088	3,851
Harbor facilities			36,616	1,419		58,793	33,232
Utility facilities	216,168	396,112	93,568	13,522	5,166	1,431,330	803,441
Public safety					28,426	58,714	73,481
Land and subdivisions				37,663	37,438	21,283	6,663
Housing				4,863	69,630	37,526	54,545
Agriculture				10,185	742		
Miscellaneous	119,138	104,722	283,772	68,528	9,940	203,993	16,526
Other (not all capital projects)			126,780	96,380	93,622	114,240	[1] 294,836
Total	3,062,629	2,412,142	1,914,714	1,800,786	1,151,798	2,617,923	1,914,097

[1] Includes $213,862 for executive branch automotive equipment.

Source: Government of Guam, financial statements.

Table 4 shows the total projected rehabilitation fund expenditures by item and the share of each treated as loans to be repaid by Guam. Assuming no major shifts in the tentative expenditure pattern, and an average interest rate of 4 percent, total service on the loans would average nearly $1.8 million per year during most of the period 1970–2000. Of this amount, about $263,000 is attributable to the commercial port and $920,000 to the public utility agency (sewers included). To what extent these agencies would actually cover the costs in their rate structure is uncertain. The general fund, therefore, will bear an absolute minimum annual cost of about $600,000 and possibly several hundred thousand dollars more after a buildup period of several years beginning in 1969.

TABLE 4.—*Rehabilitation Act programs—Projected expenditures*

	Total allocation	Share repayable
Public schools	$8,682,800	$4,341,400
College of Guam	1,565,000	782,500
Village development	3,603,000	1,801,500
Urban renewal	1,315,000	1,315,000
Penitentiary and juvenile institutions	702,400	351,200
Other public buildings	1,050,000	525,000
Sewers	7,092,300	3,546,150
Water	4,292,500	4,292,500
Power	6,475,000	6,475,000
Telephone	72,000	72,000
Air terminal	850,000	425,000
Commercial port	9,100,000	4,550,000
	200,000	
Total	45,000,000	28,477,250

Source: Government of Guam.

It does not appear that the rehabilitation fund outlays will result in a decrease of government of Guam regular expenditures for capital improvements from recent levels. Expenditures on parks, playgrounds, and other recreational facilities are likely to increase, as are capital costs of the street and road rystem. Equipment costs for the public schools and the College of Guam will probably increase, and the housing problem may well demand more outlays by local government than in the past. Other government buildings are planned, outside the rehabilitation program. And the new air terminal will not only require participation of $500,000 by Guam over and above the rehabilitation loan, but will generate substantial operating costs that probably will not be covered by operating revenues. Increased operating costs will also be associated with the new school plant and some of the other capital facilities.

D. Revenue Sources

General fund revenues of the government of Guam increased from $16.1 million in fiscal 1960 to $18.2 million in fiscal 1965, as indicated in table 5. Income tax revenue (locally collected and returned by the U.S. Treasury) declined somewhat as a percentage of total revenue, to about 56 percent in 1964 and 1965. Revenue from Federal grants-in-aid has shown no trend, fluctuating in the range 9 to 12 percent in most years. Revenues from local sources—tax and other—have therefore increased somewhat as a proportion of total revenue, from about 25 percent in 1960 to about 35 percent in 1965.

TABLE 5.—*Government of Guam general fund revenue, fiscal years 1959–65*

Source	1959		1960		1961		1962		1963		1964		1965	
	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
Income taxes	$9,060,154	66.2	$10,096,125	62.6	$9,339,992	63.7	$7,998,997	58.9	$7,729,452	54.6	$8,704,432	52.6	$10,124,527	55.7
Gross receipts tax	1,226,323	8.9	1,436,604	8.9	1,586,642	10.8	1,998,811	14.7	2,364,514	16.7	1,917,849	11.6	2,088,000	11.5
Real property tax	187,173	1.4	208,349	1.3	238,877	1.6	246,077	1.8	278,686	2.0	651,349	3.9	2,087,527	11.5
Other local taxes	904,963	6.6	1,014,547	6.3	972,567	6.6	946,776	7.0	1,018,874	7.2	1,004,118	6.1	1,676,910	9.2
Licenses and permits	946,419	6.9	994,705	6.1	959,958	6.5	942,344	6.9	1,004,944	7.1	1,004,118	6.1	1,676,910	9.2
Court fines and fees	95,863	.7	91,448	.6	89,147	.6	84,288	.6	94,817	.7	116,988	.7	131,988	.7
Use of money and property	187,720	1.0	260,268	1.6	346,761	2.4	345,630	2.5	348,167	2.4	364,988	2.2	211,988	1.2
Federal grants-in-aid	1,315,366	9.6	2,002,374	12.4	1,994,988	13.6	1,895,836	13.9	1,995,221	14.0	1,771,988	10.8	1,676,910	9.2
Charges for current service	362,535	2.5	440,414	2.7	454,196	3.1	617,752	4.5	611,221	4.3	364,988	2.2	364,988	2.0
Other revenue	346		20,304	.3	112,430	.8	99,335	.7	99,146	.7	364,988	2.2	364,988	2.0
Total	13,742,491	100.0	16,068,499	100.0	14,653,744	100.0	13,804,068	100.0	14,142,981	100.0	17,230,989	100.0	18,178,729	100.0

Source: Government of Guam annual audit reports, and department of finance.

Table 6 compares per capita government revenues in Guam in 1964–65 with U.S. averages for State and local government in 1963–64. Guam is slightly below the U.S. average in total general revenue and far below it in revenue from local sources and Federal grants-in-aid of a regular nature. But Guam received about $184 per capita (55,000 population base) in Federal income taxes or their locally collected equivalent.

TABLE 3.—*Per capita general revenues, Guam (1964–65) and U.S. average (1963–64)*

	Guam	U.S. average	High State	Low State
From Federal Government	$216.00	$52.27	[1] $365.54	[2] $27.90
Grants-in-aid	31.80	52.27	[1] 365.54	[2] 27.90
Federally collected income tax	67.10			
Locally collected income tax	117.10			
Taxes from comparable local sources	89.40	249.75	[3] 349.05	[4] 145.57
Property	12.10	111.02	[5] 174.67	[1] 28.95
Individual and corporate income		28.67		
Sales, gross receipts, and excise	64.10	82.38		
Vehicle registration and operators' licenses	8.50	10.70		
Other	4.70	16.98		
Current charges and miscellaneous [6]	25.10	51.13		
Education	[7] 2.90	14.69		
Hospitals	10.50	6.30		
Other	11.70	30.14		
Total from comparable local sources	114.50	300.88	[3] [7] 424.21	[4] [7] 185.79
Total including Federal	330.50	353.15	[3] [7] 721.64	[4] [7] 222.36

[1] Alaska.
[2] New Jersey.
[3] California.
[4] South Carolina.
[5] Excludes charges for sewage and air and water terminals, and revenues to utilities, liquor stores, and insurance trust funds.
[6] Excludes school lunch sales.
[7] Includes charges for sewage and air and water terminals, if any.

Sources: Government of Guam, Financial Statements (preliminary), July 1, 1964, through June 30, 1965; U.S. Bureau of the Census, Governmental Finances in 1963–64 (Series G–GF64–No. 1), June 9, 1965.

Federal assistance to Guam (aside from OEP and rehabilitation funds) is actually somewhat higher than the figure indicated if one shifts to an accrual basis. Not shown in the general revenue statistics for 1964–65 are Federal grants to cover MDTA and Headstart expenditures, and school construction expenditures covered by grants made in previous years. Federal cash grants to the school lunch program are also omitted. These items amounted in 1964–65 to about $188,000, or $3.40 per capita. But the total for Federal grants is still quite low, especially when compared with that of the high State (Alaska) or Wyoming's $187. Both the latter States had extremely large grants for highway purposes in 1963–64, whereas Guam had none. The U.S. average for Federal highway grants in 1963–64 was $19, and this accounts for the difference between Guam and the United States indicated in table 6. Guam's Federal grants were primarily for education and secondarily for public health and welfare. There seems little doubt that Guam's participation in Federal grant programs could be expanded substantially. (See app. 8.)

Taxes from conventional local sources are exceptionally low in Guam—particularly property taxes. The availability of Federal income taxes or their equivalent has, of course, allowed Guam to make relatively high per capita expenditures without much reliance on local tax sources. But per capita income tax revenues appear to be declining, and steadily increasing needs for revenue from local sources may be expected. Guam is fortunate in having the rehabilitation funds to finance the major capital outlays that are projected. The grant portion of the rehabilitation funds alone, amortized over 20 to 30 years, eliminates the need for perhaps $600,000 to $800,000 in annual revenues that would otherwise be required. However, even with this advantage, per capita tax and other revenues from local sources will have to be increased (as noted earlier) in order to finance the $1.8 million or so annual cost of the loan portion. Higher capital outlays and operating

expenditures outside the rehabilitation program and other Federal programs can also be expected.

Economic development in the form of new industry in the private sector will add to government infrastructure costs, but it may not provide corresponding increases in revenue. Many or most of the new industries will presumably be granted tax abatements, and the salaries of their employees will probably not, in most cases, generate much income tax revenue because of the comparatively low wages together with rather high dependent exemptions associated with large family size.

E. Meeting the Fiscal Requirements

The significant features of Guam's present fiscal structure are—

1. A relatively high level of government operating expenditures overall and for most specific purposes except highways and public welfare, with exceptionally high expenditures for purely public administration functions;
2. A moderately low level of total government revenues (excluding relief and rehabilitation funds), derived mainly from Federal income tax transfers;
3. Unusually low revenues from "regular" Federal assistance programs; and
4. Exceptionally low revenues from conventional local sources, particularly from property taxes.

Further rises can be expected in ordinary government operating expenditures; e.g., recent increases in the appropriation of the legislature bring the per capita cost of this function alone to more than the U.S. average for all general control purposes, executive and judiciary included. Future appropriations for capital improvements will also have to be considerably higher than at present because repayment of the rehabilitation loans by itself will involve an average annual cost of nearly $2 million, and other capital outlays may be expected to increase from the $1.9 million level of 1964–65. This is the outlook without regard to the economic development recommendations in part 1 of the present report.

It is impossible to place a precise price tag on the development program, but a series of informed guesses yielded a cost of at least $1 million in capital or one-time expenditures and at least $2.5 million annually. Much of this cost is attributable to increased expenditures on education and training. Because the estimates are probably conservative, an annual equivalent of $2.9 million is assumed over the next 10 years. Rehabilitation loan repayments will begin in 1969 and will probably approach their ultimate annual cost of $1.8 million by 1971–72. At that time, the combined average cost would approximate $4.7 million per year.

Assuming a population increase in the civilian community of about 1,000 per year, a population base consistent with the arbitrary figure of 55,000 assumed for 1965 would be 61,000 in 1971. This figure, applied to the $4.7 million, yields a per capita cost for 1971 of about $77. If ordinary operating expenditures per capita remained at the 1964–65 level, and ordinary capital outlays rose to $2.5 million, total per capita revenue requirements would amount to about $440 per capita in 1971, or one-third higher than in fiscal 1965. If the trend of per capita operating expenditures evident in past years continued, however, the total revenue requirement could exceed $500 per capita by 1971. Such an amount may not be supportable for Guam.

There are four ways in which Guam can try to meet its future fiscal requirements:

(*a*) By obtaining additional Federal assistance;
(*b*) By obtaining more tax revenue and other revenue from local sources;
(*c*) By reallocating government resources to use more of them in the areas recommended and less in certain other areas; and
(*d*) By seeking out and utilizing every opportunity to reduce costs and increase the efficiency of government operations.

1. Federal Assistance

As already indicated, it should be possible for Guam to increase its participation in Federal grant-in-aid programs. Such opportunities are considered in more detail in appendix 8. Even if the 1964–65 level of grant revenue per capita were doubled, however, only about $70 per capita would be available in 1971. Certainly the search for additional Federal assistance should be pressed, but one strong reminder may be in order. Joining any grant program for which eligibility can be established may be false economy—certainly with respect to matching programs, but possibly even in cases of 100 percent Federal payment. Unless a program fits well into local plans and objectives, it may simply result in the

establishment of new, small-scale efforts in more or less irrelevant directions. Not only does this dilute and divert government managerial resources, but the additional revenue will in many cases be accompanied by new local expenditures and revenue requirements with no net gain to the general fund. Hence, close attention to the selection of appropriate Federal grant programs is required.

2. LOCAL TAXES

The disproportionately low level of receipts from local taxes in Guam suggests that substantial increases from this source might be achieved. Tables 5 and 6 indicate that gross receipts, sales, and excise taxes have been used much more extensively than others. Obviously the greatest potential, judging from the comparative U.S. figures, is offered by the property tax. This may offer certain unusual difficulties in view of attitudes toward land ownership and prevailing income levels. Certainly, however, the evidence suggests a prima facie case for some ability to pay increased real property taxes. The issue of local taxes has not been urgent in the past, but it is safe to forecast that it will become much warmer in the future as circumstances increasingly force Guam to cope with the same inexorable fiscal facts and unavoidable decisions as are faced by most mainland communities.

3. OTHER LOCAL REVENUE SOURCES

(a) *Guam Memorial Hospital*

The department of medical services is a heavy money loser. Efforts are being made to increase the collection of hospital bills but the progress appears slow. A political decision is probably required as to the proportion of its costs the hospital should insist on recovering. If substantial losses continue to be accepted, it may be worthwhile to formalize the arrangement with a means test of some sort so that persons capable of paying will not be overlooked.

(b) *Public utility agency*

Rehabilitation fund outlays for public utility improvements will require over $900,000 annually over 30 years to repay. The public utility agency has financed many capital programs from accumulated surpluses and its depreciation account. Whether or not it can reverse present conditions and make the utilities profitable in time to replace these funds and also generate the additional funds needed to meet the rehabilitation loans will depend heavily upon future management. With the present rate structure and operating costs per service, and prospective future capital outlays by 1975 of about $6 million over and above those to be financed by rehabilitation funds, the agency's revenues probably will not be adequate. Perhaps two of its greatest difficulties lie in the cost that must be paid for utility services purchased and the unusually high cost of personnel services. Various consulting reports have identified opportunities for reducing operational costs by improved management, better trained personnel, and careful analysis of manpower requirements. The use of experienced utility consultants over a period of 5 years or more, similar to the contract with Layne International for the water division, might well be considered for the other two divisions. Whether by increased rates, reduced operating costs, or both, it is expected that the utility agency will cover most of its heavy future expenses. This, it is assumed, will offset about $13 per capita of the projected increment in rehabilitation loan and other capital costs.

(c) *Commercial port*

Repayment of the loan portion of the cost of the new commercial port will add about $263,000 annually to the port's expenses. The port has managed to cover its costs on the average over the last 7 years, but substantial losses have been incurred in some years. However, there is general agreement that substantial improvements could be made in efficiency and operating costs, given strong management. It is assumed that such improvements will be made. By 1971 or 1972, therefore, about $4 per capita assignable to the loan repayment on the new port should be covered by port revenues.

4. REALLOCATION OF GOVERNMENT RESOURCES

Several government functions now involving substantial expenditure appear to have been extended somewhat past the point of greatest utility to the community in relation to their cost. Reduction of government expenditures on agriculture seems appropriate, particularly if a USDA presence can be established. Public safety services may not need to be provided so liberally. The broad functions included under the heading of "General Control" in table 1 would appear to be overdeveloped relative to others. Specifically, the village commissioner system may be obsolescent; but other costs also appear disproportionately high. These, however, are judgments that the community must make for itself in deciding upon the proper "mix" of government functions.

5. COST REDUCTION AND IMPROVEMENT OF EFFICIENCY

As the local tax burden rises, public concern with governmental costs and operational efficiency will also increase. In contrast to the selective process referred to above, the concern here is with obtaining maximum effectiveness in government management and operation wherever there is room for improvement, regardless of function. Various management studies and audits in the past have offered recommendations and advice for tightening operating and control procedures. Others will be required in the future. Opportunities for cost reduction, better management and communication, and improved personnel utilization were observed in the course of the present study also. Again, however, this is a matter between the citizens of Guam and their government. For purposes of the present study, it must suffice to state that very substantial savings can be realized in the cost of many of the present government functions, and that such savings will probably have to be realized over the years if Guam is to have a development program.

APPENDIX 8—FEDERAL ASSISTANCE PROGRAMS

Assistance is provided to State and local governments under more than 100 Federal programs. Guam can receive aid only under those programs for which the enabling laws are made applicable, by explicit mention of its name or by reference to "possessions." In some instances, special provisions are made for Guam governing allotments and matching requirements. Eligibility may come automatically, by the terms of the Federal law, or it may depend upon application approved by the responsible Federal agency.

Currently, Guam is utilizing all standard forms of Federal aid: direct grants-in-aid, shared revenues, loans and advances, and technical assistance. Grants-in-aid involve payments in cash or transfers in kind, which assist the State or local government in administering specified programs. A grant may be conditional upon the performance of certain services in conformance with established standards, but the recipient is not usually required to repay the granting agency. Shared revenues can be considered a special form of grant-in-aid. The amount of payment is a predetermined proportion of Federal Government receipts derived from a designated source, rather than an amount which is related to need for a particular program. There is no demand for repayment. Loans and advances may precede or accompany a grant and may be interest free or subject to a rate at or below market rates. Technical assistance usually consists of the designation of Federal personnel to assist in providing a service.

In the following sections, the amounts and kinds of grants-in-aid that have been provided to Guam are described and compared with Federal grants in the rest of the United States. Programs which Guam is not currently utilizing are also outlined, and those which supply technical assistance are noted. Funds received under the Federal Disaster Act and Guam rehabilitation law are treated in a separate section since they were given in response to exceptional circumstances. Finally, the shared revenues which apply to Guam are described.

A. Grants-in-Aid

1. Recent Appropriations

In fiscal 1965, Guam received $1,745,227 in Federal grants, comprising 9.6 percent of its total revenue; if shared revenues are included, the percent constituted by grants becomes 21.7. The average proportion of State and local revenues in the United States which is derived from Federal sources has been growing steadily—from 10 percent in 1955 to 15 percent in 1964.[1] The proportions in some States are significantly higher. As shown in table 1, only two States had shares of less than 10 percent in 1963, and in 15 States the proportion was over 20 percent. In general, the sparsely populated public land States had the highest percentages.

[1] Budget of the U.S. Government, 1966, p. 466.

TABLE 1.—*Percent of general revenue of State and local governments which is of Federal origin* [1]

State or local government	
Guam (1963)	10.2
Guam (1964)	9.0
Guam (1965)	9.6
U.S. average (1963)	13.9
U.S. average (1964)	15.0
Alaska (1963)	35.5
Wyoming (1963)	34.9
District of Columbia (1963)	26.3
New Mexico (1963)	24.8
New York (1963)	7.7
New Jersey (1963)	9.4
Connecticut (1963)	10.3
Wisconsin (1963)	10.7

[1] Revenue from Federal origins for the United States includes shared revenues (1.7 percent of total Federal aid) and loans and advances (2.3 percent of total Federal aid).

Sources: Government of Guam Financial Statements; U.S. Bureau of the Census, Statistical Abstract of the United States, 1965, Washington, D.C., 1965, p. 427; Budget of the U.S. Government, fiscal 1966, p. 466.

The relatively low share of Guam's revenue that is represented by grants-in-aid can be partially explained by examination of the types of programs in which it participates. Table 2 presents the breakdown of grants by purpose for Guam and the Nation. Highway and public assistance programs account for over 70 percent of the U.S. total but less than 10 percent of Guam's grants. The high proportion for education in Guam is due primarily to the funds received under the program of school operations and maintenance in federally impacted areas. As such, its education grants are not comparable to those of any single State. Most of the States in table 1 which realized a high proportion of their revenue from Federal grants had relatively small proportions of grants for health and welfare and large shares for highway construction.[2] The most notable voids in Guam's Federal grant programs (in addition to highway grants) are funds for agriculture and agricultural resources and for housing and community development.

TABLE 2.—*Distribution of grants-in-aid by major program*

[Percent]

Program	United States			Guam		
	1963	1964	1965 [1]	1963	1964	1965
National defense	0.5	(3)	(3)	0.8	1.0	1.0
International affairs	(3)	(3)	(3)			
Agriculture and agriculture resources	6.2	6.7	5.4			
Natural resources	0.7	0.5	0.6	2.0	1.4	0.6
Commerce and transportation	36.5	39.9	40.3			
Highways	(35.7)	(36.6)	(37.2)			
Housing and community development	4.7	4.8	5.3			
Health, labor, and welfare	45.5	42.7	42.9	25.7	28.7	32.1
Public assistance	(32.2)	(29.5)	(26.9)	(9.9)	(7.8)	(8.1)
Education	4.7	4.8	4.9	71.4	67.8	66.2
Veterans' benefits	(3)	(3)	(3)			
Other	(3)	0.5	(3)			
Total	100.0	100.0	100.0	100.0	100.0	100.0

[1] Estimated.
[2] Less than 0.5 percent.

Sources: Government of Guam, financial statements; U.S. Bureau of the Census, Statistical Abstract of the U.S., 1965, Washington, D.C., 1965, p. 422.

[2] Sophie R. Dales, "Federal Grants, 1963-64," Social Security Bulletin, vol. 20, No. 6 (June 1965), pp. 8-11.

Grants per capita, by type of program, for the United States and Guam are listed in table 3. The population data used to calculate the per capita figures for Guam do not include off-island defense-connected Federal personnel. This omission is especially important for education since children of the military and other Federal employees attend local schools. Thus, the resulting numbers should be considered upper limits; and in other cases, similarly, the grants per capita may be overstated because they do not take into account whatever portions of the military base populations, if any, are relevant for each type of aid. However, these crude data make it evident that Guam's per capita grants are substantially below the national average. In general, States with low population density and low per capita personal income receive more than the national average.[3]

TABLE 3.—*Federal grants per capita by major program* [1]

Program	United States			Guam		
	1963	1964	1965	1963	1964	1965
National defense	$80.21	$80.21	$80.20	$80.23	$80.23	$80.32
International affairs	.04	.03	.03			
Agriculture and agriculture resources	2.76	3.43	3.07			
Natural resources	.29	.24	.32	.50	.41	.18
Commerce and transportation	16.40	20.79	22.93			
Highways	(16.02)	(19.04)	(21.17)			
Housing and community development	2.12	2.36	2.99			
Health, labor and welfare	20.41	22.25	24.41	.64		
Education	2.47	2.50	2.77	7.07	7.68	10.20
Veterans' benefits	.04	.04	.04	19.60	19.48	21.01
Total	44.89	52.09	56.86	27.40	28.50	31.71

[1] U.S. figures based on provisional estimates of U.S. population, excluding Armed Forces abroad. Population for Guam used in calculation excludes persons living on military bases; estimates of population were 53,000 for 1963, 54,000 for 1964, and 55,000 for 1965.

Sources: U.S. Statistical Abstract and government of Guam financial statements.

2. CURRENT APPROPRIATIONS

Funds that have been appropriated for fiscal 1966 for Guam and those that were still pending as of September 1965 are presented in table 4. Programs which also provide technical assistance are indicated. The table is not complete since new programs have been introduced and will probably be utilized by Guam.[4] However, the data do give a good indication of the amount and areas of assistance for 1966.

[3] Ibid.

[4] The Elementary and Secondary Education and Medicare Acts are prime examples.

TABLE 4.—*Federal financial assistance programs, fiscal year 1966*[1]

Department or Agency	Authority	Federal amount	Total contributed by Guam		Total amount
			Amount	Percent	
Interior	Commercial Fisheries Research and Development Act, Public Law 88-309	$20,000	[2] $10,000	25	
	Fish Restoration Act (64 Stat. 430, as amended; 16 U.S.C. 777-777k)	10,000			$10,000
	Wildlife Restoration Act (50 Stat. 917, as amended; 16 U.S.C. 669-669i)	10,000			10,000
	Land and Water Conservation Fund Act, Public Law 88-578:				
	Outdoor recreation, 1965	86,994	86,994	50	173,988
	Outdoor recreation, 1966	36,476	36,476	50	72,952
Agriculture	National School Lunch Act, Public Law 83-864: School lunch program	50,083			50,083
Defense	Civil Defense Administration, Public Law 85-606 (as amended): [3] Personnel and administrative services	14,437			14,437
HEW	School operation and maintenance in federally affected areas, Public Law 81-874 ($240 per pupil fiscal year 1966 based on 1965 enrollment of 5,138)	1,078,980			1,078,980
	Library Services Act, Public Law 88-269				
	Elementary and Secondary Education Act (not available)	32,274	27,390	34	59,664
Executive	Economic Opportunity Act, Public Law 88-452:				
	1. Project Headstart, title II	174,147	17,414	10	191,561
	2. Work study, title I	39,406	3,940	10	43,346
	3. Community action program, title II-A (pending)	47,895	4,789	10	52,684
	4. Neighborhood Youth Corps, title I-B (pending)	247,500	24,750	10	272,250
	5. Basic adult education, title II B (pending)	105,300	10,530	10	115,830
	Emergency Resources Management, Public Law 88-253	13,868			13,868
	Urban Renewal and Housing Activities,[4] Public Law 88-171:				
	1. Sinajana project	333,381	166,691	33⅓	500,072
	2. Yona project	165,573	82,787	33⅓	248,360
HEW and Labor	Manpower Development and Training Act, Public Law 87-415:				
	1. Administration	17,466			17,466
	2. Clerk-typist (Y-5001):				
	(a) HEW	72,114			72,114
	(b) Labor	56,735			56,735
	3. Auto mechanic (Y-5002):				
	(a) HEW	74,343			74,343
	(b) Labor	28,526			28,526
	4. Carpentry (R-5003):				
	(a) HEW	26,456			26,456
	(b) Labor	29,288			29,288
	5. Welding (R-5004)				
	(a) HEW	39,941			39,941
	(b) Labor	29,284			29,284
	6. Masonry (R-5005):				
	(a) HEW	18,507			18,507
	(b) Labor	26,762			26,762

HEW							
Do	Vocational Education Act, Public Law 88-210						
	Vocational Rehabilitation Act, Public Law 88-565:						
	1. Support program	75,819	75,830	50	151,699		
	2. Innovative training	100,215	44,237	50	147,455		
Do	Water Pollution Control Act (Public Law 84-660)	1,818	312	50	2,029		
Do	National Defense Education Act, Public Law 85-864 (as amended):	34,496			34,496		
	1. Title III equipment and remodeling	8,616	5,617	50	11,253		
	2. Title III equipment and remodeling	22,010	22,010	50	44,020		
	3. Title V-A	20,000	20,000	50	100,306		
	4. Title X-A	19,267	19,267	50	38,575		
	5. NSF loan fund	4,521			5,023		
	6. NSF grant (social science)	4,000	502	50	4,980		
	7. NSF grant (science)	6,670			6,670		
Do	Public assistance, Public Law 88-560, sec. 506-1101 (a) to (l), Social Security Act as amended, title V, pts. I and II, Health Grants Manual, pt. 12-2 and 3.						
	1. Maternal and child health	180,061	152,609	50	282,670		
	2. Crippled children services (A)	54,539	54,539	50	108,115		
	3. Crippled children services (B)	25,000			25,000		
	4. Old age assistance	41,902	41,902	50	83,804		
	5. Aid to the blind	1,343	1,343	50	2,686		
	6. Aid to families with dependent children	86,946	86,946	50	173,892		
	7. Aid to the permanently and totally disabled	11,708	11,708	50	23,336		
	8. Administration (family services and supervision)	33,592	33,592	50	67,172		
Do	Maternal assistance to the aged, Public Law 87-778	13,446	13,446	50	26,892		
Do	Child welfare and day care services, Public Law 87-543:						
	1. Foster boarding care	19,220	9,610	33⅓	38,440		
	2. Community service	25,488	11,744	33⅓	51,344		
	3. Group home care	34,630	17,316	33⅓	69,277		
	4. Administration	31,051	15,526	33⅓	62,103		
Do	Public Health Service Act, sec. 314(d), subsec. b, c, or e, as amended, and title 42, ch. 1, pt. 51-16, Health Grants Manual, Public Law 84-905:						
	1. Tuberculosis control	10,000	35,000	50	45,000		
	2. Mental health	65,000	32,141	50	97,141		
	3. Heart disease control	36,040	20,437	50	57,487		
	4. Cancer control	5,449	4,363	50	14,862		
	5. Chronically ill and aged	27,577	14,288	50	55,677		
	6. Radiological control	10,000	10,000	50	24,000		
Do	Public Health Centers, Hill Burton grants, Public Law 88-664 sec. 621, as amended, title VI, Health Grant Manual, pt. 11-2						
	1. Hospital	100,000	50,000	33⅓	150,000		
	2. Health center	50,000	25,000	33⅓	75,000		
	3. Diagnostic or treatment center	100,000	50,000	33⅓	150,000		
	4. Long-term care	25,000	12,500	33⅓	37,500		
	5. Rehabilitation facilities	1,407,330	2,570,368	33⅓	4,977,698		
Do	Water Pollution Control Act, Public Law 84-660	130,575	65,438	33⅓	196,013		
HUD	Urban renewal assistance,[3] Housing Act of 1964: Master plan (May 1963 to June 1965, extended to December 1965).						

[1] As of September 1965.
[2] Pending.
[3] Technical assistance available under program.
[4] Guam legislature did not appropriate necessary funds.

About $2,250,000 had been approved by September 1965 for programs for which appropriated funds would be entirely expended in fiscal 1966. This amounts to 13 percent of Guam's anticipated total revenue.[5] Although this is an increase over preceding years, Guam still obtains a relatively low proportion of its revenue from grants, its per capita assistance funds remain below average, and the imbalance in its areas of assistance persists. Some of these problems can be ascribed to the fact that Guam is not eligible for certain programs, some of which would be of value. However, there are other difficulties associated with certain programs which currently apply to Guam. Grants are sometimes divided among the States and possessions on a proportionate-to-population basis. In these instances, Guam can receive only small amounts, particularly if a floor has not been established. Other programs require proof of need based on unemployment percentages, per capita income statistics, or other such data. As has been pointed out elsewhere in this report, these types of data are incomplete and unreliable in Guam, causing a further obstacle to the procurement of additional Federal grants.

3. OTHER FEDERAL GRANT PROGRAMS

Programs not currently being used by Guam but which might be of benefit are described below. Those which are applicable to Guam are indicated by an asterisk; the absence of a mark, however, does not necessarily mean that the law does not now apply to Guam. This may be determined by inquiry to the administering Federal agency. The programs are listed by governing department or agency and by the number of the statutory provision. This enumeration does not exhaust all the possibilities for Federal assistance to Guam, but it does provide several suggestions of sources for additional aid.

Agriculture

**88–584: Guam Technical Agricultural Services.*—Authorizes the Secretary of Agriculture to maintain an agricultural program in Guam which will include such programs administered by the USDA as are determined by the Secretary to promote the welfare of the island.

Commerce

**88–280: Federal Airport Act.*—Grants for advance planning and engineering and airport development projects, including construction and land acquisition. Maximum Federal share is 75 percent.

**87–27: Area Redevelopment Act—*87–658: Accelerated public works.*—These programs have been absorbed by the Public Works and Economic Development Act of 1965. Of those accelerated public works projects now pending, only those which clearly bear no relationship to economic development need not be resubmitted to the Economic Development Administration.

**89–136: Public Works and Economic Development Act.*—Guam has been designated as an eligible area. Grants of up to 50 percent will be given for development facility projects in all eligible areas. Severely distressed areas may receive up to 80 percent from the Federal Government. Private businesses are eligible for loans up to 65 percent of the total cost of land, buildings, machinery, and equipment. Available technical assistance includes management and operational aid to private firms, and training of personnel to administer State and local economic development. Finally, grants-in-aid not to exceed 75 percent of overall cost will be provided for preparation and implementation of development plans.

**88–157: Highway planning, research, and construction.*—Funds are available for planning future programs, engineering and economic surveys, and construction and improvement. The Federal share is above 50 percent in States where public domain exceeds 5 percent of the total area.

Defense

**81–920: Civil defense.*—Contributions of hardware such as radiological detection and monitoring instruments.

88–172: Beach erosion and shore protection.—Purposes are to prevent shore damage by waves and currents, and to promote recreation. Grants up to 100 percent are available for studies. Contributions for construction are subject to specific congressional authorization, except for small projects where the Federal share does not exceed $400,000. Generally, the maximum Federal share is 70 percent.

[5] Territory of Guam, "Proposed Executive Budget for the Fiscal Year 1966."

Health, Education, and Welfare

**88–210: Title VII National Defense Education Act of 1958—Educational television, radio, motion pictures and related media.*—Grants for research and experimentation in development and evaluation of projects. Matching not required. Technical assistance and demonstrations also provided.

**88–204: Higher education facilities.*—Grants of 66⅔ percent of cost of construction and improvement of structures and acquisition of equipment. Funds are currently being used for construction of college buildings.

**81–815: School construction in federally affected areas.*—Assistance for construction of public school facilities where estimates of school enrollments for a biennial period indicate that there will be a specified increase in the number of federally connected children who cannot be accommodated without Federal help. This aid is not immediately needed in Guam, since substantial funds for school construction are being provided under the Rehabilitation Act.

**88–581: Nurses Training Act of 1964.*—Several provisions including construction grants with Federal share of thirds, grants to expand and improve curriculums and student loan funds.

42 U.S.C. 241: Vital statistics.—Technical advice and financial assistance for the collection of health data and application of statistical methods to it.

42 U.S.C. 2545: Juvenile delinquency and youth offenses control.—Grants for demonstration and evaluation of projects that will contribute to the prevention and control of juvenile delinquency and for the training of personnel to be employed in these programs.

Housing and Home Finance Agency

89–117: Housing and Urban Development Act of 1965.—Financial assistance for several purposes, including aid for homeowners in urban renewal areas; community and neighborhood facilities, such as youth centers and health stations (up to 75 percent); acquisition of open space land and development for park and recreational purposes, conservation, and historic and scenic purposes (up to 50 percent). Technical assistance for the preparation and execution of urban plans.

B. Emergency Assistance

Over $48 million has been appropriated by the U.S. Government to assist in the repair of damages inflicted by recent typhoons. Under the Federal Disaster Act, $3,358,940 has been advanced to Guam. Of this amount, $2,469,287 had been expended by June 30, 1965, for the purposes shown in table 5.

TABLE 5.—*Cumulative status of Federal financial assistance projects under the Office of Emergency Planning, June 30, 1965*

Project	Cumulative appropriation	Cumulative expenditures and encumbrances
Typhoon Karen (subtotal)	$3,049,795	$2,160,142
Medical services	28,200	28,183
Repair of streets and roads	29,400	29,325
Power system distribution of lines	640,000	577,539
Repair of communications	281,000	269,292
Repair of water system	50,000	49,266
Public buildings	176,597	168,784
Emergency shelters	173,670	173,175
Temporary housing site preparation	70,000	29,630
Cleaning of debris	423,744	314,931
Government housing (furniture and equipment)	250,600	244,450
Public school furniture and equipment	559,000	48,722
Library (books)	6,118	6,428
Port facilities	1,644	630
Public safety (furniture and equipment)	45,271	43,295
Public works (bus shelters and equipment)	22,897	22,424
Civil defense (siren)	9,100	9,673
Procurement and supply	7,500	7,106
Department of Agriculture	5,650	5,492
Hospital equipment and supplies	110,000	111,899
Public health center	6,640	6,590
Removal of temporary housing	137,494	2,039
Pumping and sewage	15,000	11,119
Typhoon Olive (subtotal)	309,145	309,145
Clearing of debris	66,107	66,107
Repair of streets and roads	82,177	82,177
Repair of public buildings	75,592	75,592
Repair of public utilities	85,269	85,269
Total	3,358,940	2,469,287

Sources: 1964 government of Guam accountants' reports, financial statements, and 1965 government of Guam preliminary financial statements.

The Rehabilitation Act of November 1963 appropriated $45 million to aid construction of necessary public works, to develop and stimulate trade and industry, and to provide facilities for community life through projects of public works and community development. Table 6 indicates the projects underway or planned under the program. Of the total projected costs, about $29,132,800 represents loans to be repaid within 30 years at an interest rate to be determined by the Secretary of the Treasury, based on the average yield of outstanding marketable obligations of the United States of comparable maturities.

TABLE 6.—*Rehabilitation act projects*

Project	1964–65	1965–66	1966–67	1967–68	1968–69	1969–70	Total
Educational facilities	$8, 263, 000	$625, 000		$1, 359, 800			$10, 247, 800
College	940, 000	625, 000					1, 565, 000
Other	7, 323, 000			1, 359, 800			8, 682, 800
Village development	1, 780, 000	1, 823, 000					3, 603, 000
Urban renewal		1, 315, 000					1, 315, 000
Public works	1. 203, 800	83, 000		180, 000			1, 466, 800
Penal institution	339, 400	83, 000		180, 000			602, 400
Other	864, 400						864, 400
Public utilities	6, 703, 200	1, 011, 000	$4, 008, 000	2, 572, 900	$1, 122, 300	$2, 700, 000	18, 117, 400
Sewer	3, 677, 600	1 528, 000	2, 886, 700				7, 092, 300
Water	915, 000	236, 000	1, 121, 300	1, 072, 900	947, 300		4, 292, 500
Power	1, 925, 000	175, 000		1, 500, 000	175, 000	2, 700, 000	6, 475, 000
Telephone		72, 000					72, 000
Other	185, 600						185, 600
Resource development	1, 050, 000	4, 800, 000	4, 300, 000				10, 150, 000
Air terminal	850, 000						850, 000
Commercial port		4, 800, 000	4, 300, 000				9, 100, 000
Economic development plan	200, 000						200, 000
Total	19, 000, 000	9, 657, 000	8, 308, 000	4, 212, 700	1, 122, 300	2, 700, 000	45, 000, 000

NOTE.—(1) Source shows $528,000 as total amount, but components are listed as loan, $389,000, and grant, $389,000.

C. Shared Revenues

The Organic Act of Guam provides that customs duties, passport, immigration and naturalization fees, Federal income taxes derived from Guam, and the proceeds of all taxes collected under the internal revenue laws of the United States are to be covered into the treasury of Guam. Because Guam currently has free-port status, there are no revenues from customs duties. Another revenue not being realized is from internal revenue taxes levied on Guam products which enter the United States. About $20,000 per year is received from passport and immigration fees.

By far, the most important shared revenue is the income tax, with over half of Guam's total revenue realized from this source. It includes all Federal income taxes collected by the government of Guam from residents and those collected by the U.S. Government from Federal employees (including the military) on Guam. Income of Guâmanians from U.S. sources is taxed according to nonresident alien rules, and the tax does not revert to the treasury of Guam. A tax credit against income derived in Guam is allowed. However, there is a possibility that this will change to allow taxes from both Guam and U.S. sources to be collected by the government of Guam.

Bibliography

Advisory Commission on Intergovernmental Relations, The Role of Equalization in Federal Grants, Report A–19, January 1964.

———, Grants-in-Aid Programs Enacted by the 2d Session of the 88th Congress, Supplement to Report A–19, March 1965.

———, Periodic Congressional Reassessment of Federal Grants-in-Aid to State and Local Governments, Report A–8, June 1961.

Committee on Government Operations, U.S. Senate, Catalog of Federal Aids to State and Local Governments, April 15, 1964.

———, Catalog of Federal Aids to State and Local Governments, Supplement, January 4, 1965.

Sophie R. Dales, "Federal Grants, 1963–64," Social Security Bulletin, June 1965, Vol. 28, No. 6, pp. 3–13.

Government of Guam, Audited Financial Statements, 1962, 1963, 1964.

———, Preliminary Financial Statement, 1965.

Tudor Engineering Co., Study of Apra Harbor, January 1964.

U.S. Bureau of the Census, Statistical Abstract of the United States, 1965, 86th edition, Washington, D.C., 1965.

U.S. Department of Commerce, Area Redevelopment Administration, Handbook of Federal Aids to Communities, 1963 edition.

U.S. Department of Health, Education, and Welfare, Grants-in-Aid and Other Financial Assistance Programs, 1964–65 edition.

U.S. Treasury Department, Annual Report, Fiscal Year 1964.

———, The Budget of the United States Government, Fiscal Year 1966.

APPENDIX 9.—SUMMARY OF SUGGESTIONS FOR PROMOTING ECONOMIC DEVELOPMENT OF GUAM, PRESENTED IN PUBLIC HEARINGS TO THE FEDERAL-TERRITORIAL COMMISSION, MARCH 1965

Presentations made by various individuals frequently ranged over a variety of subjects. With duplications omitted, a consolidated list of substantive suggestions by topic is shown below.

Tourism

1. Build at least five 100-room resort hotels by 1970, complete with restaurants, bars, gift shops, recreational facilities commensurate with other Pacific resort areas.
2. Provide auxiliary tourist attractions: sightseeing, deep-sea fishing, water sports, parks, beaches, hiking trails, scenic and historic sites, display of Chamorro village with cultural performance, etc.
3. Increase frequency of air and sea transportation service; lower fares; add another air carrier, perferably on a north-south route.
4. Install training programs for personnel connected with tourism.
5. Promote Australian, Japanese, and other oriental tourist markets; cultivate local "built-in" military market; reduce competition by military facilities in entertainment and sightseeing; offer package tours in U.S. market that include Guam.
6. Enhance scenic and historical attractiveness by general community developments that extend natural charm and Chamorro heritage; don't copy Hawaii or Atlantic City.
7. Raise U.S. duty exemption for goods bought in Guam by travelers to $500.
8. Establish a closely controlled gambling casino catering to transient trade.
9. Build motels in outlying villages.
10. Instead of building large hotels, reduce risk by concentrating on smaller enterprises so that capacity does not outrun demand.

Manufacturing

1. Processing plants for local agricultural and livestock products.
2. Fish cannery.
3. Wearing apparel.
4. Potato chip plant.
5. Soap factory.
6. New process to make cans for use as beverage containers.
7. Cement plant.
8. Furniture factory.
9. Textile processing or finishing.
10. Optical goods.
11. Hand tools.
12. Copra processing.
13. Assembly of electrical products.
14. Boatbuilding.
15. Paint factory.
16. Feed mill.
17. Manufacturing will require more dependable sources of power and water than those now available.
18. Guam-made goods should enter U.S. customs area free of all tariffs.
19. Industrial land, possibly with buildings also, should be made available.
20. Processing tropical logs for shipment to United States as manufactured products.

Agriculture

1. Slaughterhouses and poultry dressing plant.
2. Production of citrus, bananas, pineapples, beef, hide, poultry, etc.
3. Establish central wholesale marketing.
4. Test feasibility of sugarcane industry.
5. Renewal of forestry program.
6. Develop irrigation and drainage projects.
7. Encourage greater availability of good land for large-scale farming and grazing, including government lands. Encourage small-scale family farming and gardening by making small plots available.
8. Dairy industry.
9. Revive coconut production.
10. Increase direct technical and financial assistance to farmers.
11. Improve insect control.
12. Open roads to farmlands presently inaccessible.
13. Provide services of veterinarian, range management expert, plant pathologist, agronomist, soil conservation technicians, etc.
14. Develop fertilizers suited to Guam conditions.
15. Provide crop insurance.
16. Establish a food, feed, and fiber technology section in the College of Guam to study maximum utilization of area resources.
17. Permit sharecroppers from oriental countries to farm in Guam.

Fisheries

1. Establish off-shore fishing industry and cannery.
2. Promote fresh-water fisheries.
3. Federal Government should send Guamanians to United States to study fishing business.
4. Allow Guamanians to fish and use bait areas of the trust territory.
5. Develop reef fish production for local market.
6. Adequate space at the commercial port will be needed.
7. Past failures of commercial shipping ventures have been due to lack of port facilities, high labor costs, and lack of technical knowledge.
8. Establish a marine biological station.

Military

1. Military exchanges should be operated under domestic base exchange policies rather than present overseas policies.
2. Allow and encourage Navy exchange to buy from local vendors.
3. Limit rest and rehabilitation programs that provide free transport of military personnel and dependents to foreign countries, in order to increase their purchases of merchandise locally.
4. Military and their families would spend much more money in Guam's private sector if resort and recreational facilities were built to serve them.
5. "Buy American" policy benefited Guam, but military exchanges are now allowed to purchase in foreign countries.

Transportation

1. New port development scheduled for 1970 on Cabras Island makes major construction at present commercial port uneconomical.
2. Small airlines need aid comparable to that offered by trust territory; financial assistance needed to purchase more aircraft for local service; maintenance facilities at NAS commercial terminal are inadequate.
3. More airline service, competition for Pan American, and lower fares are needed; additional service should be on a north-south route; better air terminal needed.
4. Lower sea transportation costs are essential; foreign-flag service should be allowed between Guam and United States; Guam should be exempted from coastwise shipping laws.
5. Availability of supersonic transport in mid-1970's will stimulate trade and tourism.
6. Better port facilities needed to stimulate faster industrial development.
7. Navy does not consider transportation costs from U.S. west coast in costing delivered items; it pays Guam farmers about the same as f.o.b. San Francisco prices.
8. More roads needed to make tourist attractions and farmlands accessible; traffic congestion needs to be relieved; Federal interestate highway funds should be sought.

9. Free bus service maintained by military should be continued.
10. Military dependents would be more available for participation in private labor force if better transportation were provided.

Land use and taxation

1. Property taxes should be based on land value only, excluding improvements; tax on improvements discourages land development.
2. Land surveying and architectural-engineering services should be done by private companies rather than military or government of Guam.
3. Government-owned land should be sold or otherwise redistributed for private use.
4. Tax on undeveloped land should be increased to compel development or sale to those who would develop it.
5. Most government-owned land is poorly suited to farming.
6. Inadequate availability of land retards development.
7. Land titles clouded by fractional lots and lack of accurate land surveys; title records are inadequate; escrows are held up unduly by property survey problems. Assessment procedures are not uniform.
8. Consolidation and replotting of lots in Agana is required in order to overcome fractional lot problem.

Labor and education

1. A number of foreign professional personnel should be allowed to immigrate as permanent residents.
2. Immigration policies should be relaxed to allow importation of temporary alien workers outside minimum wage law for private sector in cases where local labor is unavailable or insufficiently skilled.
3. Encourage Guamanians who study in the United States or elsewhere to return home.
4. Federal civil service policies permit workers classified as statesiders to receive 25 percent salary premium even when they are, in effect, permanent residents. The policy is unfair to local workers and prevents stateside people from establishing permanent residence.
5. Guamanians should be trained for skilled blue-collar vocations, but alien labor should be used meanwhile.
6. Five-year plan of Guam department of education emphasizes training in skilled trades and an intensive adult education program to combat illiteracy; it is estimated that about half of the basic male labor pool is functionally illiterate.
7. Plans exist to upgrade instructional standards.
8. Liberal scholarships for local and off-island college education are needed.
9. Programs in preparation by Guam government departments include implementation of—

Vocational Educational Act of 1963.
Manpower Development Act.
Economic Opportunity Act (adults).
Registered apprenticeship training program for construction trades.

These amount almost to a crash program in vocational education.
10. An average annual increase of 650 pupils in schools is expected.
11. About two-thirds of public school teachers are contract teachers; it costs about $5,000 to bring in a contract teacher.
12. More technical training is needed for agriculture as well as other vocations.
13. Navy trained only 130 workers in 5 years.
14. High labor costs on Guam handicap competition with other Pacific areas; new industries that are noncompetitive with existing enterprises should be allowed to use a certain proportion of imported contract labor to reduce average wage costs.
15. Labor is inefficient. Local labor is not interested in training programs to increase skills. Apprenticeship program of contractors' association in conjunction with department of education attracted 147 applications, of which only 39 are now active.
16. Private construction projects are not being built because local skilled labor is not available and alien labor cannot be used on private projects.
17. Bring stateside workers to Guam to train local workers, especially in the garment industry.

Public works and utilities

1. An atomic power plant is needed.
2. Water and power should be transferred from the military to private hands.
3. Claims of impending water shortage have led the government of Guam to investigate sources of water supply; future supplies should be sufficient if conservation measures are practiced.
4. Central sewer system is needed to reduce public health and water pollution hazard; such a system is being planned and gradually constructed.

Health

1. An accredited nursing school is needed; medical technicians are also in short supply, but local training of the latter would not be feasible; local nurses would supplant alient contract workers.
2. Health insurance plans should be made available to Guamanians.
3. Private medical practice is not lucrative at present; insurance plans would help to provide incentives for private practice.
4. Programs of mental health outpatient care, family planning assistance and social work are being planned.

Government policies toward private development

1. Organic Act should be amended to allow Guam to select those Federal laws which will apply to Guam; among the laws from which Guam should be exempted or given special treatment are the coastwise shipping law, internal revenue laws, minimum wage law, immigration rules on admission of alien labor, and the duty exemption for goods bought by travelers in Guam.
2. Local restrictions on the citizenship and/or domicile of directors, officers, etc., of Guam corporations should be removed.
3. Guam should have commonwealth status.
4. Existing tax incentive and development finance activities have not attracted interest from off-island investors. An entity with broader powers, as provided in legislature bill 67, was recommended as a more effective approach.
5. Guam Finance and Development Corporation has no loanable funds for industrial projects.
6. Tax incentives and other government measures are needed, but these should be investigated thoroughly before long-range commitments are made.

Miscellaneous

1. Facilities for long-term bank credit are inadequate.
2. Too much government redtape faces prospective private investors.
3. More Federal credit sources, including G.I. housing loans, programs equivalent to AID soft currency loans, etc. should be made available.
4. Government competition is hampering private enterprise in areas such as construction, roadbuilding, vegetation control, maintenance and janitorial services, garbage collection, stevedoring, public utilities, etc.
5. Government should make more use of advice and counsel from local business people.
6. Highly trained Guamanians are reluctant to return to Guam; there is also a movement of capital off the island. Efforts should be made to retain both human talent and local capital. Make maximum use of local *resources* before turning to outside interests.
7. An east-west university oriented to Far East is needed.
8. Peace Corps training center is needed.
9. Tropical medicine research center is needed.
10. Make Guam a commercial or financial center for the Western Pacific area.

○